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Part I

Introducing NetMaster for SNA

1

About NetMaster for SNA

NetMaster for SNA is a network management product that simplifies the processes involved in managing complex computer networks.

NetMaster for SNA can manage many thousands of network addressable units, resulting in better network performance and availability, and faster recovery from network errors.

This chapter discusses the following topic:

- What Is NetMaster for SNA?

What Is NetMaster for SNA?

NetMaster for SNA provides functions that allows you to do the following tasks:

- Monitor and react to network errors
- Command and control network resources
- Track session information from a single console
- Monitor Network Control Programs (NCPs) across the network

NetMaster for SNA provides tools that collect network information and monitor network devices so that network operators can take action before problems occur. You also get information on network status changes and network sessions so you get a complete picture of network activity.

NetMaster for SNA handles commands, messages, responses, and alarm information from multiple systems simultaneously. It can process information from a wide range of SNA and non-SNA devices and applications.

NetMaster for SNA provides a single-image facility that lets you monitor any domain from any terminal in your network, without switching between domains and without terminating and re-establishing sessions. You need to look in only one place for the information you need.

NetMaster for SNA provides real-time session-level information as well as detailed session diagnostics. This access to session start times, stop times, number of bytes passed, session trace records, and response time statistics allows you to track actual network usage and performance. For longer-term analysis, NetMaster for SNA maintains a database of session histories. This information is available to help you plan and configure your network, to ensure you have adequate resources where they are needed.

NetMaster for SNA comprises a menu-driven system of full-screen panels with context-sensitive online help.

The NetMaster for SNA components and functions are:

- Network Error Warning System (NEWS)
- Network Tracking System (NTS)
- Network Control System (NCS)
- NCPView
- The SYSCMD facility
- The Remote Operator Facility (ROF)
- The Network Management facility
- The NetView Operator Command Emulation facility
- The Information Database
- Session Replay

What Is NEWS?

NEWS provides a centralized system for the continuous monitoring of network error conditions so network operators can detect signals of hardware failures, and quickly recognize and isolate faults that occur.

NEWS recognizes and logs events (for example, degraded user response time through a particular controller). It provides the means for filtering events by service objectives and commitments. Selected event records can be stored in a database for later analysis. Others can initiate procedures that result in operator alerts, or in automatically-generated problem tickets.

NEWS Features and Benefits

To help you monitor your network, NEWS provides these facilities:

- Masks that you tailor to filter event records received, and respond to the events as you require
- In event of a failure, diagnostics that help pinpoint the cause of the failure and speed up its reversal
- Amalgamation of various types of unsolicited data from SNA and non-SNA resources in the network, and issue of requests for specific information from VTAM and certain hardware components
- The alias name translation facility to translate resource names, to avoid any confusion should a duplicate resource name be encountered in another network. This applies, for certain releases of VTAM and NCP, when SNA Network Interconnection (SNI) is used.
- Enhanced session hierarchy displays and session partner information, if the Network Tracking System (NTS) is also installed
- Issue of operating system commands and return of the results
- The ability to forward real-time alerts to Unicenter TNG, where they can be monitored from the TNG Event Management Console
- Execution of LAN Manager network, adapter, and bridge functions (including bridge configuration) from the host, if you are running the IBM LAN Manager and it supports these functions

What Is NTS?

NTS provides improved session visibility to help you determine problems and analyze your network's performance. NTS obtains information about logical network connections from VTAM's Session Awareness interface (SAW).

NTS Features and Benefits

To help you manage your network and locate problems, NTS does the following:

- Provides an integrated view of activity across multiple SNA domains and networks
- Accumulates traffic statistics for sessions and resources to allow monitoring of network performance
- Uses the data available to it to build a model of the networking environment in which it is executing
- Provides session tracing for problem diagnosis

Other NTS benefits are:

- Writes selected session details to a database, to provide an historical record of network activity that you can analyze to determine patterns, and to locate previous occurrences of a particular problem
- Interfaces with the Multiple Application Interface (MAI) component of the SOLVE:Access product, to provide you with end-to-end visibility of MAI virtual sessions
- Is tailorable, to enable the most efficient use of computer resources and to meet the specific needs of your installation

What Is NCS?

NCS is an effective and easy-to-use system for displaying and controlling network resources.

NCS Features and Benefits

NCS enables you to display:

- Lists by resource name or type, in summary form
- Detailed, graphical representations of individual resources and their subordinate nodes
- APING APPN control points
- CNM and NetSpy events and alerts for a selected resource

- NTS active sessions for a selected resource
- SNA resource session status codes

NCS also enables you to:

- Activate and deactivate resources from selection lists
- Enter NCS options to issue VTAM display, modify, and vary commands
- Display and control resources in other VTAM domains, enabling central control of all network resources

What Is NCPView?

NCPView is a NetMaster for SNA application that supports IBM 3745 and 3746-900 communications processors that run a Network Control Program (NCP). This support provides an increased level of visibility of the configuration, and of problems occurring with these communication processors.

It enables the NetMaster for SNA user to monitor:

- Token-ring resources
- Buffer and Central Control Unit (CCU) utilization
- Virtual Routes (VR) and Transmission Groups (TG)
- Internet Protocol (IP) resource statistics
- SNI connections
- Frame relay resources

It also enables the NetMaster for SNA user to:

- Generate alerts for monitored attributes exceeding thresholds
- View a performance history of monitored attributes

NCPView Features and Benefits

NCPView enables network operators to be proactive in monitoring, troubleshooting, and balancing loads among the communications controllers that are running an NCP.

It does this by enabling operators to display these types of information:

- Particular aspects of an NCP, such as associated virtual routes, transmission groups, and control block pools
- NCPs in other domains
- Information derived from an unformatted NCP dump

You can analyze information contained in these NCPView displays and use it to aid problem diagnosis.

What Is the SYSCMD Facility?

The SYSCMD facility gives you the ability to issue OS/390 operating system commands and receive responses without having to use a *real* operating system console.

The SYSCMD facility provides you with the following support:

- JES consoles or Extended Multiple Console Support (EXTMCS) consoles that facilitate the issuing of MVS and subsystem commands

  In MSP, the SYSCMD facility uses JES, and OP1 - OP2 consoles.

  MVS-specific support includes enabling you to delete WTO/R messages.

- Access to a comprehensive set of user authorization facilities, through a command authority profile in which you specify:

  - Whether a user has the authority to issue the SYSCMD command

  - The specific authority levels for operating system commands, for each supported operating system environment

- The AOM Message Delivery Service feature that queues messages to authorized Operator Console Services (OCS) receivers using the standard NetMaster for SNA delivery mechanism

- The ability for any NetMaster for SNA NCL procedure to issue associated WTO/R and DOM functions

See the chapter titled *Issuing System Commands From Your Console* in the *Management Services User's Guide*.

What Is the Remote Operator Facility?

NetMaster for SNA is designed for an integrated network of interconnected systems. The Remote Operator Facility (ROF) allows a central operator to display and control resources in any linked NetMaster region.

In order for the full capabilities of the NetMaster for SNA product to be realized on a remote system, two criteria must be met:

- The NetMaster for SNA product must be licensed on the remote system.

- Operators must be defined to the security system on the remote system with adequate authority. Their command authority should allow them to issue VTAM commands.

See the *Management Services User's Guide.*

What Is the Network Management Facility?

The standard Network Management facility provides the use of the SPO and the PPO interfaces. The SPO interface is used to issue commands to VTAM. The PPO interface is used by the distributed NCL procedure PPOPROC to receive all important network messages, particularly to intercept unsolicited VTAM PPO messages.

This facility provides an additional source of information to NetMaster for SNA. It supports VTAM operator commands (such as D and F), and implements others as Management Services (MS) commands (such as TRACE and ACT).

What Is the NetView Operator Command Emulation Facility?

The NetView operator command emulation facility is provided by NetMaster for SNA to assist users familiar with NetView. It allows users to operate NetMaster for SNA by using the same commands and procedures they are accustomed to using with NetView.

What Is the Information Database?

The Information Database contains network and Management Services information, organized by categories such as:

- 3174 error codes
- Messages
- SNA sense codes
- SNA resource status codes

Some categories of information are distributed with Management Services. However, you can add your own installation-specific categories.

What Is Session Replay?

If you have SOLVE:Access in your NetMaster region, then you have access to the Session Replay facility, which is an aid to problem diagnosis.

The Session Replay facility enables you to record all I/O activity associated with one or more terminals, by using MAI. You can then review the recorded activity frame by frame, or as a sequence.

2

Getting Started

You interact with the NetMaster for SNA region through a user interface that comprises menus, lists, and data entry panels.

This chapter discusses the following topics:

- Accessing and Leaving the NetMaster for SNA Region
- Changing Your Password
- Accessing Functions
- Using Lists
- Using Data Entry Panels
- Entering Commands
- Getting Help
- Working in Two Windows

Accessing and Leaving the NetMaster for SNA Region

You might have access to one or more regions. This depends on whether your organization has set up a single system or a multisystem environment.

To access the region, you must log on to it. The logon procedure is the same whether you are logging on in a single system or a multisystem environment. Before you can log on to a region, you need a user ID and password. Ensure that your system administrator has defined your user ID to the region and has allocated the relevant level of authority.

Logging On

Log on to a region as follows:

Step 1. Enter **LOGON APPLID(***acb-name***)**, using the ACB name of the region.

Step 2. Type your user ID and password on the displayed logon panel, and press ENTER. Figure 2-1 shows an example of the primary menu that is displayed.

Figure 2-1. The Primary Menu

```
PROD---------------- Unicenter NetMaster : Primary Menu ----------------------
Select Option ===>

  M   - Monitors                                              Userid USER01
  H   - Historical Data                                       LU     USERF011
  D   - IP and SNA Network Diagnosis                          Time   17.48.14
  I   - Information Management                                TUE 09-OCT-2001
  MAI - Access Services                                       OPSYS  OS390
  U   - User Services                                         Window 2
  O   - Operator Console Services
  A   - Administration and Definition
  SP  - SNA Performance (Appl ID NSD1VD1N)
  X   - Terminate Window/Exit









Tip of the day: Put cursor here, press F1(help) to get help on Tips of the day

 (C) 1981,2001 Computer Associates International, Inc. All Rights Reserved.
F1=Help      F2=Split     F3=Exit      F4=Return
                          F9=Swap
```

If Region Initialization Is Still in Progress

If the Initialization in Progress panel is displayed on your screen instead of the primary menu, the initialization of the region is still in progress. Press F3 (Exit) to exit to the primary menu.

If the System Image Is Still Being Loaded

If the local system image is still being loaded, the primary menu contains the LS option. You can select the option to monitor the loading process. You can also perform functions that do not depend on an active local system image (for example, working with knowledge base definitions).

Logging Off

To log out of the region from any panel, enter **=X** at the ===> prompt. This ends your current window.

If you are at the primary menu, enter **X** at the Select Option ===> prompt to end your current window.

Note

You can have two windows for each logon to a region. If you have two windows, repeat the procedure to end the remaining window to log off from the region.

The section, *Working in Two Windows*, on page 2-15 describes how to use the two session windows.

Changing Your Password

Your password for logging on to a region is verified by the User Access Maintenance Subsystem (UAMS).

The subsystem lets you change your password, or prompts you to change your password when it has expired after a period of time. You can change your password at any time after you log on to a region. The change becomes effective for subsequent logons.

Note

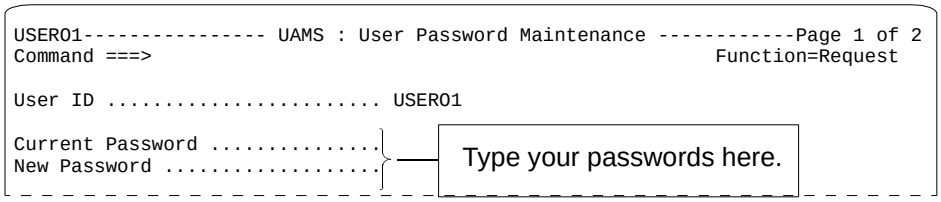
Your installation might have linked UAMS with an external security system, such as Resource Access Control Facility (RACF). If this is the case, your system administrator will tell you of any special considerations that apply when changing your password.

In a multisystem environment, the administrator might have set up the environment for the synchronization of UAMS user definitions and passwords. Changed passwords are then synchronized across linked regions.

Change your password to the region as follows:

Step 1. Enter **/CHGPWD** at a ===> prompt to access the User Password Maintenance panel. Figure 2-2 is an example.

Figure 2-2. User Password Maintenance Panel



Note

You can press F12 (Cancel) to cancel the operation at any time before Step 4.

Step 2. Type your current password in the Current Password field and the new password in the New Password field. The fields do not display the entered information.

Step 3. Press F3, and then reenter the new password in the displayed Re-enter New Password field.

Step 4. Press F3 (File) to file the changed password.

If UAMS synchronization is enabled, a Linked Regions UAMS Update Report panel is displayed when you save your changed password. The panel reports the success or failure of the password change in the linked regions.

If synchronization fails, ask the administrator to reset your password when the problem is corrected.

Accessing Functions

You access functions in the region through the user interface menus by doing one of the following:

- Selecting an option from each menu that leads to the function
- Specifying the shortcut to go to the function directly
- Specifying the path to go to the function directly

Selecting an Option

You select an option by typing the option code at the ===> prompt and pressing ENTER. For example, typing **A** at the ===> prompt on the primary menu and pressing ENTER takes you to the Administration primary menu.

Selecting a Function Directly—Using Shortcuts

You can jump to the panel of a function directly by using shortcuts. You can specify the shortcut at a ===> prompt in one of the following ways:

- Specify **/*shortcut-name*** to retain the current panel on return.
- Specify **=/*shortcut-name*** to close the current panel and return to the primary menu on return.

Each entry on a menu may be followed optionally by a shortcut, displayed in turquoise. If you do not remember a shortcut, enter **/** or **=/** to list the shortcuts and then can select one.

Accessing a Function by Using /*shortcut-name*

Caution

If your current panel does automatic updates and you no longer need this information, use **=/*shortcut-name*** rather than a nested shortcut. This saves storage and resources because the system does not need to maintain a display that you no longer need.

Note

This feature is not available from some NTS and NEWS panels.

To select the function you want, enter its corresponding shortcut, preceded by the slash (/) character, at a ===> prompt, and press ENTER.

For example, to access the Resource Administration menu, type **/RADMIN** at the ===> prompt on your current panel, and press ENTER. When you have finished with the menu, press F3 to redisplay your previous panel.

When you access a function by using its shortcut, your current panel is retained. When you press F3 to exit out of the function, this panel, with any updates, is restored. By using shortcuts, panels can be nested to a maximum of 64 levels.

Accessing a Function by Using =/*shortcut-name*

Whenever you have finished with your current panel, you can access the next function by prefixing the shortcut call with the equals (=) sign. This goes directly to the function without retaining the current panel and closes all other nested panels in this window.

For example, to access the Resource Administration menu without retaining the current panel, type **=/RADMIN** at the ===> prompt on your current panel, and press ENTER. When you have finished with the menu, press F3 to display the primary menu.

Selecting a Function Directly—Skipping Panels

You can jump to the panel of a function directly by specifying the exact path to that panel. Construct the path by linking the options you need with periods. Depending on which panel you start from, you specify the panel path in one of the ways described in the following sections.

Accessing a Panel That Is Lower in the Panel Hierarchy

If you start from a menu and want to access a panel lower in the panel hierarchy, specify the path as it is. For example, if you are at the primary menu and want to change your password, type **U.P** at the ===> prompt and press ENTER.

Accessing a Panel That Is Higher in the Panel Hierarchy

If you want to access a panel that requires you to pass through a panel higher up in the panel hierarchy, you must precede the path specification with the equals sign (=). The = character brings you back to the primary menu and then to the required panel. You can specify such a path at any ===> (or =>) prompt. For example, if you are at the resource monitor and want to change your password, type **=U.P** at the ===> prompt and press ENTER.

To return to the primary menu, enter **==**.

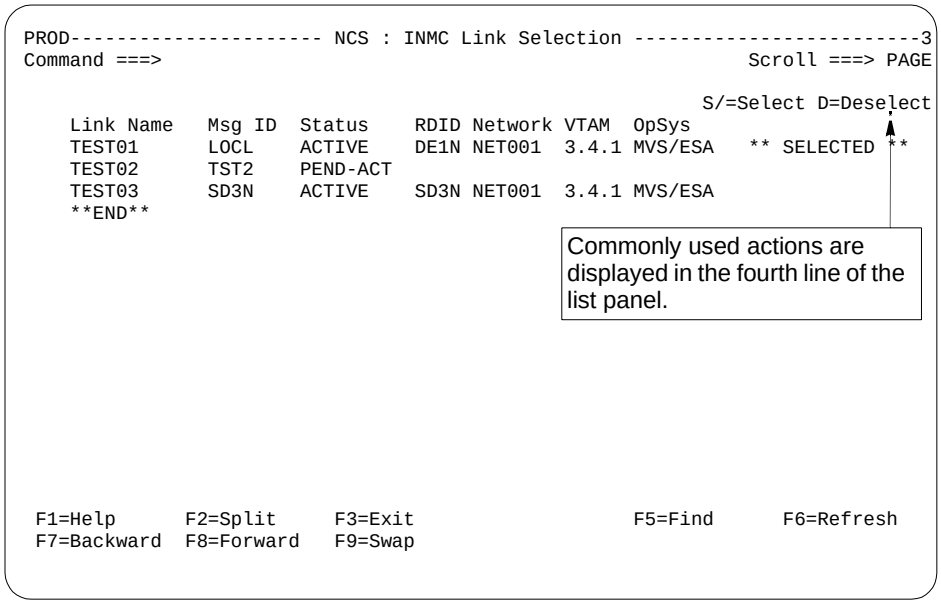
Accessing a Panel That Requires Input Data

If you want to access a panel that requires you to enter data, you can enter the data by separating them from the path by a semicolon (;). For example, if you are at the primary menu and want to access the NCP monitor for the linked region PROD2, type **M.NCP;PROD2** at the ===> prompt and press ENTER.

Using Lists

Lists comprise a series of items from which you can make a selection, or against which you can apply actions. The fourth line on a panel describes the actions that can be applied to the listed items (see Figure 2-3).

Figure 2-3. Action List



There are four types of list:

- Action lists—allow you to apply *actions* to one or more listed items. Enter the required action code beside the appropriate records. Figure 2-3 shows an example of an action list.
- Single select lists—allow you to select one item from a list (for example, the list of valid values for a data entry field) by:
  - Entering the **S** (Select) action code beside the item
  - Moving the cursor to a position anywhere in the line containing the item you want to select and pressing ENTER
- Multiple select lists—allow you to select one or more items in a list.
- Numbered lists—allow you to select a single item from the list by entering the appropriate number at the ===> prompt.

If a list is longer or wider than one panel, you can scroll vertically or horizontally, as appropriate.

Scrolling

When the listed information cannot fit onto the screen, use scrolling to access the off-screen information. You can scroll vertically and horizontally.

Scrolling Vertically

Use the F8 (Forward) or F7 (Backward) function key to scroll the displayed information forward or backward by the amount displayed at the Scroll ===> prompt. Table 2-1 shows the valid scroll amounts.

Table 2-1. Valid Scroll Amounts For Scrolling Vertically

Scroll Amount	Action
C (or CSR)	If scrolling forward, the line on which the cursor is currently positioned is moved to the top of the screen. If scrolling backward, the line on which the cursor is currently positioned is moved to the bottom of the screen.
D (or DATA)	The display is scrolled one full page, less one row, in the specified direction. If scrolling forward, the last line of the current page is displayed as the first line on the next page. If scrolling backward, the first line on the current page is displayed as the last line on the next page.
H (or HALF)	The display is moved half a page in the specified direction.
M (or MAX)	The display is moved to the beginning or the end of the displayed information, depending on the function key (F8 or F7) used.
P (or PAGE)	The display is moved one full page in the specified direction.
n	The display is moved *n* lines in the specified direction.

You can also enter a temporary scroll amount at the Command ===> prompt (for example, Command ===> 5). When you press the F8 (Forward) or F7 (Backward) function key, the displayed information is scrolled by the specified value *once only.*

Scrolling Horizontally

Use the F11 (Right) or F10 (Left) function key to scroll the displayed information to the right or to the left.

Searching for an Item in Retrieved Information

You can search for specific items in the retrieved information by using the F5 (Find) function key or the LOCATE command.

Using the F5 (Find) Function Key

The F5 (Find) function key enables you to find a particular occurrence of text in the retrieved information. Enter the text you want to find, and press F5. If the text contains more than one word, enclose the text in quotation marks.

You can press F5 again to find the next instance of the text, and so on.

You can enhance the Find function in the following ways:

- Expand the search beyond the columns currently displayed by using the FMODE command
- Change the number of records searched between prompts by using the FPROMPT command

For information about the FMODE and FPROMPT commands, see Help.

Using the LOCATE Command

The LOCATE command enables you to locate a particular record in a list. Enter **LOCATE** or **L** followed by the first few characters of the record name. The command locates the first record name in the sort field that starts with those characters.

Using Data Entry Panels

Each record in the knowledge base is displayed and maintained through a sequence of panels on which you enter the data for that record.

Switching to UPDATE Mode

Many definition panels enable authorized users to switch from the BROWSE mode to the UPDATE mode by pressing F4 (Edit). You can then edit the displayed information.

Entering Data

On a color screen, mandatory fields that you must complete are colored white. Optional fields, which you can complete as and when required, are colored turquoise. Both types of fields can be prompted fields that provide you with a list of valid values, from which you can choose one.

Prompted Fields with List of Valid Values

Many fields on the data entry panels are linked to lists containing the values that you can choose for the field. These fields are called prompted fields. Most, but *not* all, prompted fields are identified by a plus sign (+).

Enter **?** in a prompted field to display the value list, which could be either a numbered list or a single select list.

You can prefix the question mark (?) with one or more characters. The displayed list is then restricted to values that start with those characters. For example, enter **S?** to display a list of values that start with S.

Validating and Filing Data

During data entry, you can press ENTER to validate your data. Validation also occurs when you try to:

- Access another panel (for example, when you press F8 (Forward) to access the next panel)
- Save your entered data (for example, when you press F3 (File) to save a definition)

When you have finished entering data, you can do one of following:

- Press F3 (File) to save the data and return to the previous panel.
- Press F4 (Save) to save the data and remain on the panel. When adding definitions, this enables you to quickly create other similar definitions, minimizing the typing required.
- If you do *not* want to save the data, press F12 (Cancel) to return to the previous panel.

Moving Between Panels

Some functions lead to a series of data entry panels (for example, when you update a resource definition).

You can use one of the methods described in the following sections to move through these panels, depending on what you need to do.

Selecting All Panels

You might want to access every panel. All the panels are listed on a panel display list (for example, the panel that lists the resource definition panels). Enter **S** beside the name of the panel you want to access first, or enter the number that identifies that panel in the panel sequence at the Command ===> prompt (for example, 1 for the first panel). The selected panel is displayed.

Press F8 (Forward) to scroll forward to the next panel; press F7 (Backward) to scroll backward to the previous panel.

When you finish entering the data, press F3 (File) to save the data. Press F12 (Cancel) if you decide not to save the data.

Selecting Specific Panels from the Panel Display List

You might want to access certain panels only (for example, when you want to update only certain parts of a resource definition). All the panels required for a definition are listed on a panel display list. Type **S** beside the names of the panels you want to access. Once you have made all your selections, press ENTER to display the first panel you selected. Then press F8 (Forward) to scroll forward through the panels you selected. Press F7 (Backward) to scroll backward through the panels you selected.

When you finish entering the data, press F3 (File) to save the data. Press F12 (Cancel) if you decide not to save the data.

Selecting a Panel from Another Panel

If you want to skip to a panel that is not next in the sequence, and you know the sequence number of the panel you want, enter that number at the ===> prompt. The required panel is displayed.

Saving a Sequence of Definition Panels for Repeated Access

On a definition list panel, you can select more than one definition. You can then work on the selected definitions in sequence. Each definition can contain a number of definition panels. Normally, the list of panels is displayed on your screen for you to select each time you access a new definition. However, if you want to browse or update the same panels for each selected definition, you can save the list of panels you want, as shown in the following procedure.

As you move through the sequence of selected definitions, the panels appear on your screen according to the saved list. You do *not* have to select the panels again when you move on to the next definition.

The following procedure uses the resource definition panels as examples:

Step 1. Enter the **/RADMIN.R.NCPMON** path to access the list of NCP definitions. The NCP Monitor List panel is displayed.

Step 2. Type **B** (Browse) or **U** (Update) beside the definitions you want to access. You can use the F7 (Backward) or F8 (Forward) function keys to scroll through the list.

Step 3. Press ENTER to select the definitions. The Panel Display List window is displayed, listing the resource definition panels.

Step 4. Type **S** next to the panels you want, and press F4 (SaveSeq) to save the list of selected panels.

Step 5. Press ENTER to bring up the first selected panel.

When you finish with each resource definition, press F8 (Forward). The previously selected panels are displayed in the same sequence for each definition in turn.

Entering Commands

The NetMaster for SNA product supports Management Services (MS) commands, OS/390, z/OS, and MSP operating system commands, and VTAM commands. You can issue these commands as MS commands to perform various actions.

Entering Management Services (MS) commands

You can enter MS commands by using the Operator Console Services (OCS) panel. To access this panel, enter **O** on the Primary Menu. To obtain a list of all MS commands, operands, and brief descriptions, press F1 (Help).

Messages are displayed as a result of the commands. To scroll through the messages, use the appropriate function keys. Table 2-1 provides examples of MS commands.

Table 2-2. Examples of MS Commands

Command	Function
PROFILE	Displays or modifies a user profile
SHOW USERS	Displays the current signed on users

Entering MVS/MSP Operating System Commands

You can enter OS/390, z/OS, and MSP operating commands as MS commands for tasks associated with your operating system environment. Responses are returned to the OCS window.

To enter these commands, prefix them with SYSCMD. For example, for the operating system command D J,NM1, enter SYSCMD D J,NM1.

For information about the SYSCMD command, see the *Management Services Administrator Guide*.

Entering VTAM Commands

You can enter VTAM commands as MS commands for tasks associated with managing your network environment. When entering VTAM commands (shown in Table 2-3) as MS commands, you simplify them (see the following example).

VTAM Command	MS Command
D NET,ID=NM1	D NM1

Table 2-3. VTAM Commands Summary

Command	Function
ACT	Activates a VTAM node.
D	Displays a specific VTAM resource.
F	Issues a VTAM modify (F) command.
FORCE	Forcibly inactivates a VTAM network node.
INACT	Inactivates a VTAM network node.
NOTRACE	Terminates a VTAM network trace.
REPLY	Issues a VTAM REPLY command.
TRACE	Initiates a VTAM network trace.
V	Issues a VTAM VARY command.

Getting Help

Online help is provided for panels and messages.

Online help is context-sensitive and available at different levels. When you are viewing a help panel, pressing F1 (Help) takes you to the next available higher level of help. Pressing F3 (Exit) takes you back to the previous level of help, or exits help and returns you to the application. Pressing F4 (Return) exits help and returns you to the application immediately.

Using the Tip of the Day

The region displays a tip about using the product at the bottom of the primary menu. To display the detailed tip, place the cursor on the tip and press F1 (Help).

Getting Help About a Panel

Panel-based online help includes information about what each panel is used for, how to complete the fields, the actions you can perform, and the use of available function keys. Use this online help to supplement the information in this guide while you are working in the region.

Press F1 (Help) to retrieve the online help for a given panel. When you are viewing a help panel, you can press F6 (HelpHelp) to find out how to use the help facility.

If the block of help text you require splits across two panels, use the arrow keys to move the cursor to the top or the bottom of the block and press F8 (Forward) or F7 (Backward) to bring the block into view.

Getting Help About a Message

While you are working in the region, you receive messages that advise you of various events. These messages might be providing information only (for example, informing you that an update has been successful). They might also alert you to errors (for example, if you try to enter an action that is not valid for a resource).

Each message has detailed online help text associated with it. Access the help text for a particular message in one of the following ways:

- If you are viewing a transient log, enter **H** beside the message.
- If you are at a panel and a message is displayed in red on the third line of that panel, move the cursor to that line and press F1 (Help).
- If you receive a message referring you to the activity log for more detail, enter **/LOG** at the ===> prompt to display the activity log. For details about the activity log, see the *Management Services User's Guide*.
- If you are using the activity log, a Command Entry panel, or OCS, you can do one of the following:
  - Move the cursor to the line displaying the message, and press F1 (Help).
  - Type the message ID at the => prompt, and press F1 (Help).
- You can also enter **/CODES** to display the Messages and Codes Menu panel that enables you to obtain help on messages and on miscellaneous error codes.

Working in Two Windows

You can divide your physical screen into two logical windows. Each window operates independently of the other, enabling you to perform multiple functions concurrently.

Open a second window by using the F2 (Split) or F9 (Swap) function key.

Splitting Screens

Using the F2 (Split) function key, you can:

- Split your screen horizontally and have one window above the other

  To split your screen horizontally, move the cursor to a row where you want to split screens, and press F2 (Split).

- Split your screen vertically and have two windows side by side

  To split your screen vertically, move the cursor to any column on the bottom row, and press F2 (Split).

Returning a Split Screen to Single Window Display

You can return a split screen to single window display in one of the following ways:

- Move the cursor to the first line on your screen, and press F2 (Split) to minimize the window. The window containing the cursor disappears, and the other window expands to full size.
- Enter **=X** to exit one of the windows. Your session with that window ends.

Swapping Screens

Using the F9 (Swap) function key, you can:

- Reverse the dimensions of the windows if you have two windows open and both are visible on the screen, and toggle between them
- Open a second full-screen window if you are currently operating with a single window open, and then toggle between them

Part II

Monitoring Your Network

3

About Network Error Monitoring

This chapter provides an overview of the Network Error Warning System (NEWS) and how it is used to monitor network errors.

This chapter discusses the following topic:

- About NEWS

About NEWS

NEWS is the network error warning system of NetMaster for SNA. It allows you to monitor network errors by using the following functions:

- The alert monitor—displays operator alerts generated by your NetMaster for SNA region
- Device support—used to solicit and display information from your connected devices as well as to configure them
- Database review menu—displays the five types of CNM records stored in the NEWS database
- LAN management

These functions are described in detail in the following chapters:

- Chapter 4, *Monitoring Alerts*
- Chapter 11, *Managing and Soliciting Information from Network Devices*
- Chapter 13, *Investigating Network Errors and Trends*
- Chapter 10, *Displaying and Controlling LAN Resources*

NEWS also provides the following functions:

- Alert creation
- Control functions

For information on these functions, see the *Unicenter NetMaster Network Management for SNA Administrator Guide*.

4

Monitoring Alerts

This chapter discusses the following topics:

- Monitoring Active Alerts
- Working with Alerts
- Raising Trouble Tickets for Alerts
- Displaying Alert Details
- Displaying Alert History

Monitoring Active Alerts

The Alert Monitor provides an integrated, correlated event notification system that indicates to network operators that a problem has been detected and that some action needs to be taken. Such alerts from NetMaster for SNA, known as active alerts, are displayed on the alert monitor. Alerts that were raised before the system was shut down are not displayed on the Alert Monitor panel when the system is restarted, but are displayed on the Alert History panel. The alert history contains information about alerts that are no longer active (closed alerts).

The alert monitor can initiate actions such as starting recovery procedures, and creating trouble tickets, either automatically or manually.

For information about both active and closed alerts, see the section, *Displaying Alert History*.

To display alerts on the Alert Monitor, enter **/ALERTS** at the ===> prompt.

Figure 4-1. Alert Monitor

```
PROD (14.22.38)----------- Alert Monitor : Alerts  ------------Link: *MULTIPLE*
Command ===>                                                  Scroll ===> CSR

           S/B=Browse T=Track N=Notes A=Analyze TT=TroubleTicket C=Close ?=More
    Time     Description                              Resource          Track
    14.20.32 NetSpy:NSD1AD13 APPL Byte Rate/sec > 25 DENM2
    14.20.31 NetSpy:NSD1AD13 APPL # of Sessions > 8  DENM1
    14.14.05 Node: 203.4.212.10    NETSTATUS         203.4.212.10
    14.14.04 Node: 130.200.110.138 NETSTATUS         130.200.110.138
    14.14.03 Node: 130.200.110.137 NETSTATUS         130.200.110.137
    14.14.03 Node: 130.200.110.136 NETSTATUS         130.200.110.136
    14.14.03 Node: 130.200.110.135 NETSTATUS         130.200.110.135
    14.14.03 Node: 130.200.110.134 NETSTATUS         130.200.110.134
    14.14.03 Node: 130.200.110.131 NETSTATUS         130.200.110.131
    06.02.57 Node: 155.35.210.254 PING Status: Timeo ausygr01.ca.com
    10.38.11 PERM LU6.2 session activation rejected  CPPBROB3
    14.04.00 Number of Hops is 7  Threshold: 5  Node ferfr03.ca.com
    14.20.31 NetSpy:NSD1AD11 VR PIU Segments/Minute  16.0.2
    14.20.31 NetSpy:NSD1AD13 APPL Byte Rate/sec > 25 DENM1
    14.16.16 TEMP SSMC22D6/STNM1: Protocol above lin SSMC22
    14.16.16 TEMP SSMC22K1/STNM1: Protocol above lin SSMC22
    14.16.15 TEMP SSMC2204: Protocol above link leve SSMC22
 F1=Help      F2=Split     F3=Exit      F4=History   F5=Find      F6=Hold
 F7=Backward  F8=Forward   F9=Swap                 F11=Right
```

By default, alerts are sorted in order of highest severity, then in date and time order. This is equivalent to issuing the SORT command:

```
SORT S ASCENDING, DATE DESCENDING, TIME DESCENDING
```

You can change the sort order by using the SORT command. You can locate an alert by the sorted fields by using the LOCATE command.

For details of the syntax of the SORT command, enter **SORT ?** at the ===> prompt.

For details of the information displayed and the actions available, press F1 (Help).

Commands on the Alert Monitor Panel

You can issue the following commands at the ===> prompt:

- SORT
- LOCATE
- FILTER
- DEFINE FILTER
- FORMAT
- DEFINE FORMAT
- HISTORY

For information about these commands, press F1 (Help) from the Alert Monitor panel.

Working with Alerts

The alert monitor displays the alert when it arrives. Alerts can be closed automatically by NetMaster for SNA or manually by the operator. When an alert is closed, it is removed from the active alert monitor. However, it is still accessible from the Alert History panel.

Typically, when an alert arrives, do this:

Step 1. Browse the alert to find out whether any suggested recommended actions are provided. To browse the alert, enter **B** beside the alert.

Step 2. To diagnose the alert, enter **D** beside it. Diagnosis displays additional information if the alert was sourced from a CNM event.

Step 3. To respond to an alert, indicate to other users that you will be working on it. To do this, enter **T** beside the alert. Your user ID is displayed in the Track column.

Step 4. Perform any necessary actions to remove the alert condition. (For information about actions, press F1 (Help).)

Step 5. Record notes that provide future reference information about this alert in the alert definition. To do this, enter **N** beside the alert.

Step 6. After the alert condition is resolved, close the alert (if required). To do this, enter **C** beside the alert.

Raising Trouble Tickets for Alerts

Your site is likely to have site-specific procedures for raising trouble tickets. Depending on your site-specific setup, you can send a trouble ticket in the form of an e-mail or by using a customized NCL procedure. (For information about customized procedures at your site, see your System Administrator.)

To use the procedure defined at your site for raising a trouble ticket, apply the **TT** (TroubleTicket) action at the Alert Monitor panel.

The Trouble Ticket action produces a request for a trouble ticket as defined to your NetMaster for SNA system.

Displaying Alert Details

The Alert Display panel describes an active alert, and provides information about its generation time and its identity. An alert comes with the following information:

- General information such as severity level, the source of the alert, and update history
- Possible causes of the alert and any recommended actions

To display the Alert Display panel, enter **B** or **S** beside an alert on the Alert Monitor panel (/ALERTS).

Figure 4-2. Alert Monitor : Alert Display

```
PROD-------------------- Alert Monitor : Alert Display -----Columns 00001 00079
Command ===>                                                  Scroll ===> CSR

 Alert Description
  PERM Equipment malfunction

 Alert History
  Created at .................. THU 22-NOV-2001  14.45.06
  Last Updated at ............. THU 22-NOV-2001  14.45.06
  Number of occurrences ....... 2
  Elapsed time ................ 0 hours 02 minutes
  Last occurred at ............ THU 22-NOV-2001  14.47.28

 Alert Identification
  Severity ............ 3 (Medium)

  System .............. PROD

  Application ......... NetMaster for SNA Version 4.0

  Alert Class ......... NEWS
  Class Description ... NEWS Parent Class
 F1=Help      F2=Split     F3=Exit                   F5=Find
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed, press F1 (Help).

Printing Alert Details

To print details of the displayed alert, enter **PRINT** at the ===> prompt.

Displaying CNM Alert Details

The Generic Alert Display panel for a CNM alert contains a formatted presentation of an NMVT x'0000' generic alert. This information is obtained by analyzing the codes found in one or more sub-vectors present in the alert record. Not all of these fields are present in all displays.

To display the Generic Alert Display panel, enter **D** beside a CNM alert on the Alert Monitor panel (/ALERTS).

Figure 4-3. NEWS : Generic Alert Display

```
PROD-------------------- NEWS : Generic Alert Display ----------------------FTI
COMMAND ===>                                                  SCROLL ===> CSR

         NTWK          SSCP          DOM           USER          NCL
         FTI         SDD1VTM1        DE2N         USER01       $NWALERT

Node Name       : USER01                  Time: 14:47:28 Date: THU 22-NOV-2001
Component Desc  : NEWS - Network Error Warning System

Event Type      : PERMANENT ERROR
Description     : EQUIPMENT MALFUNCTION
Probable Cause  : CONTROL PANEL

Alert Generation Time
    Local date ..................... THU 22-NOV-2001
    Local time ..................... 14:47:28

User Cause
    Invalid transit network routing selected

    Recommended Action
    Multiple failures indicate control unit failure

Sending Resource
```

For details of the information displayed, press F1 (Help).

Displaying Alert History

The alert history lists all alerts, both active and closed, that occurred on the local region during a period.

To view the alert history from the Alert Monitor panel, press F4 (History). The alerts for the current date are displayed. To display the alerts for other dates, use the DATE command. (For information about the DATE command, press F1 (Help).)

Note

History records are retained only for a certain number of days. To define or change history logging parameters, see the *Unicenter NetMaster Network Management for SNA Administrator Guide*.

For details of the information displayed and actions available, press F1 (Help).

Commands on the Alert History Panel

You can issue the following commands at the ===> prompt:

- SORT
- LOCATE
- DATE

For information about these commands, press F1 (Help) from the Alert History panel.

5

Monitoring Your NCP Configuration

This chapter describes how to use NCPView to monitor your NCP configuration.

This chapter discusses the following topics:

- Information That NCPView Provides
- Monitoring NCPs
- Actions on the NCP Monitor
- Displaying NCP Summary Information
- Monitoring NCP Performance History
- Updating NCP Definitions

Information That NCPView Provides

NCPView enables you to view the configuration of, and problems with, IBM 3720, 3725, 3745, and 3746-900 communications controllers that are running Network Control Programs (NCPs). NCPView gives you greater network and NCP availability by allowing you to monitor NCP versions 4, 5, 6, and 7.

NCPView is of value to you as a network operator as it provides increased visibility of your NCPs, including supported non-SNA protocols and physical interfaces. By using the data provided by NCPView, you have the potential to both solve problems and prevent problems from occurring in your network (for example, slow response times and inability to access the system).

Features of NCPView

NCPView provides the following features to assist you in monitoring your NCPs:

- Lists and summary information of NCPs
- Formatted dumps of NCP control blocks and storage displays
- View of an NCP unformatted dump as a real NCP
- Display of adapter and token-ring information
- Display of frame relay physical links and subports
- Display of buffer and pool information
- Display of networks attached using SNI
- Display of IP router statistics
- Display of transmission group information
- Display of NCP utilization
- Display of virtual route information
- History of monitored attributes (utilization, buffer use, and pool usage)

NCP Resources That Can Be Monitored

By using the data provided through NCPView's interactive panels and diagnostic aids, you have the potential to both solve problems and prevent them from occurring—for example, slow response times and inability to access the system.

The NCP resources that can be monitored by NCPView and the information provided for each, are as follows:

- NCP configuration—the NCP release, generation date and time, subarea address, and usage tier
- Communication controller configuration—the controller model, storage size, operating mode, and maintenance and operator subsystem (MOSS) engineering change (EC) and FIX levels

- Processing and storage—the use of central control unit (CCU) cycles and NCP buffers, and the display of NCP storage in dump format
- NCP control blocks —the size and use of NCP control block pools
- Virtual routes—window sizes, traffic rates, and congestion
- Transmission groups—the type, status, and queue sizes
- SNA Network Interconnection (SNI) resources—the network names table, Half-session Control Blocks (HSCBs), and Gateway Network Addressable Units (GWNAUs)
- IBM 3745 channel and line adapters—the type, address, and status
- Token-ring resources—the Token-ring Interface Couplers (TICs), physical and logical lines, stations, and routes
- Internet protocol (IP) resources—IP router statistics
- 3746-900 CSS (Connectivity SubSystem) adapters—adapters that are on the 3746-900 expansion frame.

Monitoring NCPs

Monitoring your NCPs allows you to view information about all active NCPs and any NCP dumps allocated to NCPView. The information in the list is obtained from a table of NCPs built by NCPView at initialization time.

To monitor all NCPs, enter **/NCPMON** at a ===> prompt. The Status Monitor : NCP Monitor panel is displayed.

Figure 5-1. Status Monitor : NCP Monitor

```
PROD------------------- Status Monitor : NCP Monitor -----------------PROD-0001
Command ===>                                                 Scroll ===> CSR

     AL=Alerts AD=Adapters BB=Buffers PL=Pools H=History SM=Summary ?=List Cmds
                                          Buffer Monitor            Next
    System   Name     Model    SubArea CCU% Usage% Status      Alerts Sample
    PROD     NCP001   3745-17A      16    5     20 Active           0 11:23
    PROD     NCP002   -              -    -      - Inactive         -  -
    **END**
```

To see more pages of this panel, press F11 (Right).

For details of the information displayed and actions available on the Status Monitor : NCP Monitor panel, press F1 (Help).

For further information about monitoring your NCPs, see Chapter 6, *Monitoring NCP Utilization and Storage*.

Actions on the NCP Monitor

There are many actions that you can use on the NCP monitor to manage your NCPs. To view the actions available for an NCP, enter **?** beside its name.

A panel is displayed, listing the available actions in alphanumeric order by name in two groups. Actions that are specific to NCPs come first (displayed in turquoise), followed by other generic actions. To apply an action, enter **S** beside it.

In a multisystem environment, you can see NCPs defined in all linked regions. The system name shown for each NCP identifies the region. You can apply actions to remote NCPs in the same way as to local NCPs.

The actions specific to NCPs are:

Table 5-1. NCP Actions

Action	Description	Action	Description
ACH	NCP Channel Adaptors List	IM	Inactivate Monitoring
ACS	3746-900 Adapter List	IN	NCP SNI Diagnostics
AD	NCP Adapter Menu	IP	NCP IP Router Statistics
ADL	NCP Adapter List	PL	NCP Buffer Pool List
AL	Alerts for Resource	SD	NCP Storage Diagnostics Menu
ALA	NCP Line Adaptors List	SM	NCP Summary Information
AM	Activate Monitoring	TG	NCP Transmission Group List
BB	NCP Buffer Statistics	TIC	NCP Token-ring Interface List
D	NCP Display Menu	TR	NCP Token-ring Adapter List
DEL	Delete an NCPMON Resource	TRL	NCP Token-ring Logical Links List
FR	Frame Relay Lines List	UZ	NCP Utilization
H	NCP Monitor History	VR	NCP Virtual Route List

Displaying NCP Summary Information

NCP summary information provides detailed information about a specified NCP. This display provides additional information about an NCP to that provided by the NCP Selection List.

To access NCP summary information, enter **SM** next to an NCP entry on the Status Monitor : NCP Monitor. The NCPView : NCP Details panel for the selected NCP is displayed.

Figure 5-2. NCP Summary Information

```
PROD------------------------ NCPView : NCP Details --------------- Page 1 of 1
Command ===>                                                  Function=Browse

Domain ........................... PR1N
NCP Name ......................... NCP001
NCP Configuration Details
  NCP Version ..................... V7R8.1
  SSP Version ..................... V4R8.1
  Generation Date ................. 21-SEP-2001 23:57:14
  Load Module Name ................ NCP001        Dump Date .......
  Multiple Load Module Support? ... YES           Dump Time .......
  Usage Tier ...................... 1             Abend Code ......
  Subarea Address ................. 16
Hardware Details
  Model-Type ...................... 3745-17A      Serial Number ... 0074863
  CCU Operating Mode .............. SINGLE        CCU ............. A
  Installed Memory ................ 4MB
Maintenance Details
  Microcode EC Level .............. D40002
  Microcode EC Fix Level .......... M002A087
  Date CDS Last Updated ........... 28-MAR-2000 17:21

 F1=Help      F2=Split     F3=Exit                              F6=Refresh
                           F9=Swap     F10=Print
```

For details of the information displayed on this panel, press F1 (Help).

Monitoring NCP Performance History

To monitor NCP performance history, enter **H** (NCP Monitor History) next to an NCP on the NCP monitor (/NCPMON). The NCPView : NCP Performance History panel is displayed.

Figure 5-3. NCPView : NCP Performance History

```
PROD----------------- NCPView : NCP Performance History -----------------------
Command ===>                                                  Scroll ===> CSR

     Resource ID ......... NCP001
     Description ......... NCPView Monitoring
     Current Alerts ...... 0
                                      E=Expand C=Contract  S/=Summary D=Detail
                                -- Alerts --          Last
    Attribute/Qualifier          Open  Total Samples Sample        Value Type
     |__ BufferUtilization                  0       6 11:05            2 GAUGE
     |__ CCUUtilization                     0       6 11:05            1 GAUGE
    **END**









 F1=Help      F2=Split     F3=Exit      F4=Expand    F5=Find      F6=AutoRfsh
 F7=Backward  F8=Forward   F9=Swap                 F11=Right    F12=ByQual
```

For details of the information displayed on this panel, press F1 (Help).

Updating NCP Definitions

To update an NCP definition:

Step 1. Enter **DB** (Database Administration for a Resource) next to an NCP on the NCP monitor (/NCPMON). The ResourceView : Panel Display List is displayed.

Figure 5-4. ResourceView : Panel Display List

```
PROD----------------- ResourceView : Panel Display List -----------------------
Command ===>                                                  Scroll ===> CSR

                                    Use 'S' to select panel(s) to be displayed
    Panel Description
    NCP Monitor General Description
    NCPMON NCP001 Monitoring Definition
    NCPMON NCP001 Automation Log Details
    NCPMON NCP001 Owner Details
    **END**
```

Step 2. Enter **S** in front of each panel that you want to update for the NCP. The selected panels are displayed in sequence as you complete each one. For details of the information displayed on each panel, press F1 (Help).

Step 3. On the NCP Monitor General Description panel, change any details that you want to update.

Note

If you want regular sampling of NCP attributes to produce a monitoring history or to generate alerts, then set Monitoring Activity to ACTIVE.

Step 4. If you want to use one of the predefined templates for the monitoring definition, enter **L** in the Template Name selection field.

Step 5. Press F8 (Forward). The NCPMON Monitoring Definition panel is displayed.

Step 6. Set the frequency for monitor samples to be taken in the Monitor Interval field—this can be from 5 to 60 minutes.

Step 7. Press F10 (Attributes) to edit the attributes to be monitored.

Step 8. Press F8 (Forward). The NCPMON Automation Log Details panel is displayed. This panel defines the resource transient log.

It is recommended that you accept the default settings for this feature. For more information, press F1 (Help).

Step 9. Press F8 (Forward). The Owner Details panel is displayed. The fields on this panel are for documentation purposes only.

Step 10. If required, complete the fields on the panel and press F3 (Save). The NCP monitor is displayed, with a message that the update was successful.

6

Monitoring NCP Utilization and Storage

This chapter describes how to use NCPView to monitor the utilization of and the storage on your NCPs.

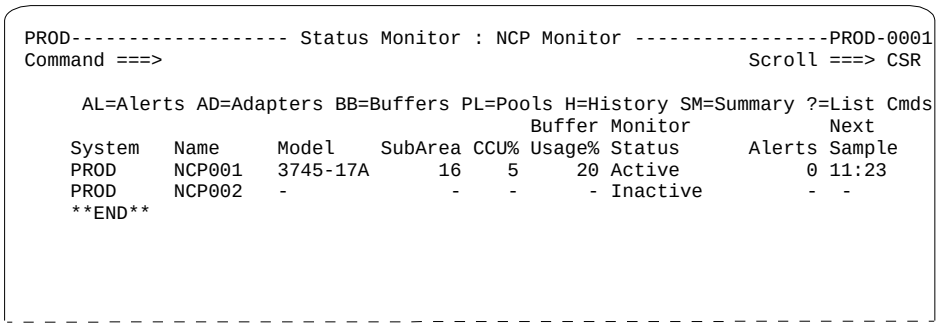
This chapter discusses the following topics:

- Monitoring NCPs
- Monitoring NCP Utilization Information
- Monitoring Buffer and Pool/Table Usage Information
- Displaying a Formatted Dump of an NCP Control Block
- Printing NCP Information

Monitoring NCPs

To monitor all NCPs, enter **/NCPMON** at a ===> prompt. The Status Monitor : NCP Monitor panel is displayed.

Figure 6-1. Status Monitor : NCP Monitor



For details of the information displayed and actions available on the Status Monitor : NCP Monitor panel, press F1 (Help).

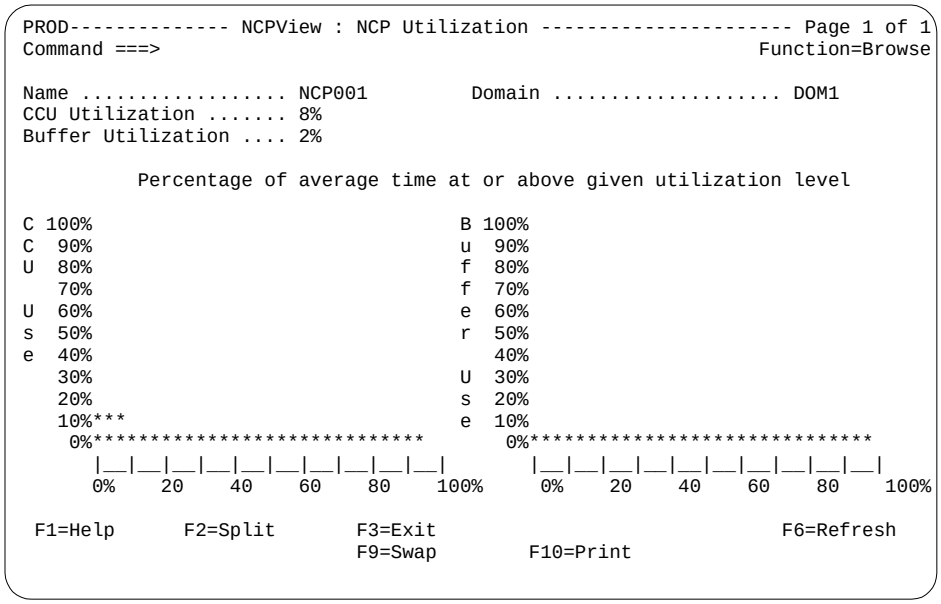
Monitoring NCP Utilization Information

When monitoring your NCPs, it is important to know how much storage each NCP is using and how the central control unit (CCU) is being utilized by that NCP. NCPView provides the utilization menu to monitor NCP utilization.

Monitoring the amount of storage being utilized in the buffers of an NCP allows you to prevent problems with storage before they affect the performance of your system.

To access utilization information, enter **UZ** (NCP Utilization) next to an NCP entry on the Status Monitor : NCP Monitor. The NCPView : Utilization panel is displayed.

Figure 6-2. NCPView : Utilization Panel



For details of the information displayed on this panel, press F1 (Help).

Monitoring Buffer and Pool/Table Usage Information

Your NCPs have pools of storage that contain buffers, the size of which is specified when the NCP is generated. These buffers are used to hold data temporarily while it is in transit to a destination. For a description of NCPView buffers and pools, see Appendix B, *NCPView Buffers, Pools, and Control Blocks*.

Listing Pool/Table Usage

When defining pools in the generation definition of an NCP, space can be reserved for control blocks. The pool can be defined to contain a particular number of control blocks. Control blocks can also be dynamically allocated when there are no more defined control blocks in the appropriate pools.

Listing NCP pool/table usage allows you to monitor the use of defined or dynamically allocated control blocks. If a pool is being used almost to capacity, it might mean that the NCP generation definition should be changed to increase the size of the pool.

To access buffer and pool/table usage information, enter **PL** (NCP Buffer Pool List) next to an NCP entry on the Status Monitor : NCP Monitor.

A selection list of control blocks for the nominated NCP is displayed, showing basic pool usage information. The list is sorted so that the pools with the highest maximum use percentage are placed at the top of the list.

Figure 6-3. NCPView : Control Block Pool/Table Usage List

```
PROD----------- NCPView : Control Block Pool/Table Usage List -----------------
Command ===>                                                 Scroll ===> CSR

                                                                        G=GPA
     Domain ............ DOM1 NCP Name ..... NCP001

                     Current Maximum Current Maximum           Free   Free
    Name                 Use    Used     Use    Used   Total Unrsvd   Rsvd
    BSB-D-LU-LU          66%     68%     277     284     416    139      0
    BSB-D-SSCP-LU        66%     68%     277     284     416    139      0
    LND/LNB              66%     68%     277     284     416      0    139
    LUB                  41%     42%     278     286     666    388      0
    NQE                   0%     38%       0     293     764    764      0
    NQ2                   0%     38%       0     293     764    764      0
    VTS                  25%     25%       2       2       8      6      0
    NNT                  16%     20%       5       6      30     25      0
    VAT                  16%     16%       2       2      12     10      0
    NSX                   2%      2%      20      20     688    668      0
    BSB-I                 0%      1%       2       4     350    348      0
    LNB                   0%      1%       2       4     300      0    298
    BXI-D                 0%      0%       0       0       0      0      0
    BXI-I                 0%      0%       0       0       0      0      0
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap                  F11=Right
```

You can display a formatted dump of the GPA control block associated with the selected pool/table by typing **G** next to an entry in the selection list.

To view all information associated with the list, press F11 (Right).

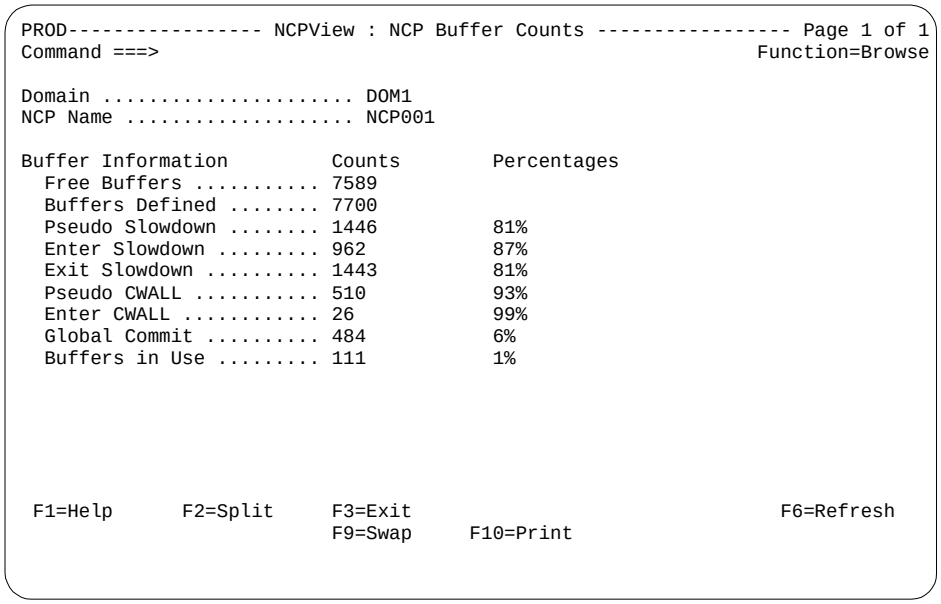
For details of the information displayed on this panel, press F1 (Help).

Browsing Buffer Usage

Buffers are taken from pools when they are needed to store data. Buffers can be set aside specifically to receive incoming data; these are known as committed buffers. NCPView allows you to monitor the number, use, and status of the buffers on your NCP.

To display buffer usage for an NCP, enter **BB** (NCP Buffer Statistics) next to an NCP entry on the Status Monitor : NCP Monitor. The NCPView : NCP Buffer Counts panel is displayed.

Figure 6-4. NCPView : NCP Buffer Counts Panel



For details of the buffer information displayed on this panel, press F1 (Help).

Displaying a Formatted Dump of an NCP Control Block

A detailed display of storage is needed when you have been able to locate the exact cause of a problem. NCPView provides you with a detailed display of storage and control blocks by using formatted dumps.

Displaying a formatted dump of a control block allows you to view the length of a control block, the fields in the control block, the length of these fields, and the type of data that a control block contains. See Appendix B, *NCPView Buffers, Pools, and Control Blocks*, for more information about control blocks.

To display a formatted dump of an NCP control block, enter **G** (GPA) next to an entry on the NCPView : Control Block Pool/Table Usage List. The NCPView : View Control Block panel is displayed.

Figure 6-5. NCPView : View Control Block Panel

```
PROD------------------- NCPView : View Control Block -------Line 1 to 15 of 55
Command ===>                                     Function=Browse Scroll ===> CSR

NCP Name ...... NCP001   Control Block Name ...... ABN
Address  ...... 021BC4   Length .................. 216

******************************** TOP OF DATA ********************************
Control Block Field               Hex Offset  Data
--------------------------------- ----------  ----
NCPV7R3.ABNTEMP ..................(000000)... X'00000000'
NCPV7R3.ABNABNXP .................(000004)... X'00021C44'
NCPV7R3.RESERVEDA ................(000008)... X'0000000000000000'
NCPV7R3.ABNL1IAR0 ................(000010)... X'00000000'
NCPV7R3.ABNL1IAR1 ................(000014)... X'00000000'
NCPV7R3.ABNL1IAR2 ................(000018)... X'00000000'
NCPV7R3.ABNL1IAR3 ................(00001C)... X'00000000'
NCPV7R3.ABNL1IAR4 ................(000020)... X'00000000'
NCPV7R3.ABNL1IAR5 ................(000024)... X'00000000'
NCPV7R3.ABNL1IAR6 ................(000028)... X'00000000'
NCPV7R3.ABNL1IAR7 ................(00002C)... X'00000000'
NCPV7R3.ABNL2IAR0 ................(000030)... X'00000000'
NCPV7R3.ABNL2IAR1 ................(000034)... X'00000000'
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find
 F7=Backward  F8=Forward   F9=Swap     F10=Left     F11=Right
```

For details of the control block information displayed on this panel, press F1 (Help).

Printing NCP Information

The PRINT command prints the data displayed on certain NCP panels. This allows you to archive critical NCP information.

Using the PRINT Command

The PRINT command is available on the following NCP panels:

- NCPView : Control Block Pool/Table Usage List (left/right views)
- NCPView : NCP Buffer Counts (single view)
- NCPView : NCP Utilization (single view)
- NCPView : NCP Details (single view)

On a Single-view Panel

To print a single-view NCP panel, do either of the following:

- Press F10 (Print).
- Enter **PRINT** at the ===> prompt.

On a Multi-view (Left/Right) Panel

To print a multi-view NCP panel, enter the PRINT command at the ===> prompt in one of the following forms:

- **PRINT**—to produce a combined print (110 characters wide) of data from both left and right views of the panel
- **PRINT LEFT**—to print data from the left view of the panel only
- **PRINT RIGHT**—to print data from the right view of the panel only

7

Monitoring NCP Adapters and Links

This chapter describes how to access information about adapters and links for an NCP.

This chapter discusses the following topics:

- Displaying Adapters
- Listing Adapters
- Listing Channel Adapters and Displaying Details
- Listing Line Adapters and Displaying Details
- Displaying Token-ring Adapters and Links
- Displaying Frame Relay Physical Lines and Their Subports
- Displaying 3746-900 CSS Adapters

Displaying Adapters

The correct functioning of an NCP adapter is necessary for communication with the connected devices on your network. It is important to be able to monitor your adapters to prevent communication problems, or to locate the source of such a problem if it occurs. For a description of adapter types and configuration, see Appendix A, *NCPView Adapter Configuration.*

NCPView provides you with an adapter menu to perform this monitoring function for channel adapters, line adapters, token-ring adapters, and CSS adapters.

To access adapter diagnostics, enter **AD** (NCP Adapter Menu) next to an NCP entry on the Status Monitor : NCP Monitor (/NCPMON). The NCP : Adapter Diagnostics menu is displayed for the selected NCP.

Figure 7-1. NCP : Adapter Diagnostics

```
PROD----------------- NCP : NCP001 Adapter Diagnostics ------------------ZNC020
Select Option ===>

   LA  - List all Types of Adapters
   LC  - List Channel Adapters
   LL  - List Line Adapters
   TR  - Token-ring Diagnostics
   FR  - Frame Relay Diagnostics
   CSS - List 3746-900 CSS Adapters
   X   - Exit

 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

For details of the options available on this panel, press F1 (Help). These options are discussed in the following sections.

Listing Adapters

Listing adapters allows you to see all the adapters attached to a 3745/3746-900 communications controller, their type, and whether they are functioning.

To list all types of adapters for an NCP, enter **LA** at the ===> prompt on the NCP : Adapter Diagnostics menu for that NCP. The NCPView : Adapter Selection List for the specified NCP is displayed. Figure 7-2 shows a selection list of adapter types for NCP001.

Figure 7-2. NCPView : Adapter Selection List

```
PROD----------------- NCPView : Adapter Selection List ------------------------
Command ===>                                                 Scroll ===> PAGE

                                                                     S/B=Browse
     Domain ..... DOM1  NCP Name ..... NCP001

    ID      Type     Installed Switched  Attached Operative
    CA01             NO
    CA02    CADS     YES       NO        NO       YES
    CA03    CADS     YES       NO        NO       YES
    CA04    CADS     YES       NO        NO       YES
    CA05    TSS      YES       NO        YES      YES
    CA06    CADS     YES       NO        YES      YES
    CA07    CADS     YES       NO        YES      YES
    CA08    CADS     YES       NO        YES      YES
    CA09    CADS     YES       NO        NO       YES
    CA10             NO
    CA11             NO
    CA12             NO
    CA13    CADS     YES       NO        YES      YES
    CA14    CADS     YES       NO        YES      YES
    CA15             NO
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

To access detailed information about any of the listed adapters, enter **S** or **B** next to the required adapter in the selection list. The information displayed depends on the type of adapter it is. Information for the specific types of adapter is described in the following sections.

Listing Channel Adapters and Displaying Details

You might have a problem with channel adapters on a specific NCP. The adapter menu allows you to list these channel adapters and access detailed information about each one to investigate the problem.

To list channel adapters for an NCP, enter **LC** at the ===> prompt on the NCP : Adapter Diagnostics menu for that NCP. A channel adapter selection list for the specified NCP is displayed, similar to that in Figure 7-2.

To access detailed information about a channel adapter, enter **S** or **B** next to the required channel adapter in the selection list. The NCPView : Channel Adapter Details for the selected channel adapter is displayed.

Figure 7-3. NCPView : Channel Adapter Details

```
PROD----------------- NCPView : Channel Adapter Details -------- Page 1 of 1
Command ===>                                                  Function=Browse

Domain ..................... DOM1
NCP Name ................... NCP001
Adapter ID ................. CA03
General Adapter Details
  Type ............................. CADS
  Installed ........................ YES
  Operative ........................ YES
  Attached ......................... NO
  Switched to this CCU ............. NO
Channel Adapter Details
  Logical Address .................. 10
  Bus .............................. IOC2
  Channel Adapter Type ............. 6
  Program Status ....................
  Two Processor Switch? ............ NO
  Channel Read Buffer Size ......... 0              (UNITSZ)
  Read Buffers Allocated ........... 0              (MAXBFRU)
  Channel is a Peripheral Resource? ... NO
  Adjacent Subarea Address ......... 0
 F1=Help      F2=Split     F3=Exit                              F6=Refresh
                           F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Listing Line Adapters and Displaying Details

You might have a problem with line adapters on a specific NCP. The adapter menu allows you to list these line adapters and access detailed information about each one to investigate the problem.

To list line adapters for an NCP, enter **LL** at the ===> prompt on the NCP : Adapter Diagnostics menu for that NCP. A line adapter selection list for the specified NCP is displayed, similar to that in Figure 7-2.

To access more information about a line adapter, type **S** or **B** next to the required channel adapter in the selection list, and press ENTER. The NCPView : Line Adapter Details for the selected line adapter is displayed (see Figure 7-4).

Figure 7-4. The NCPView : Line Adapter Details

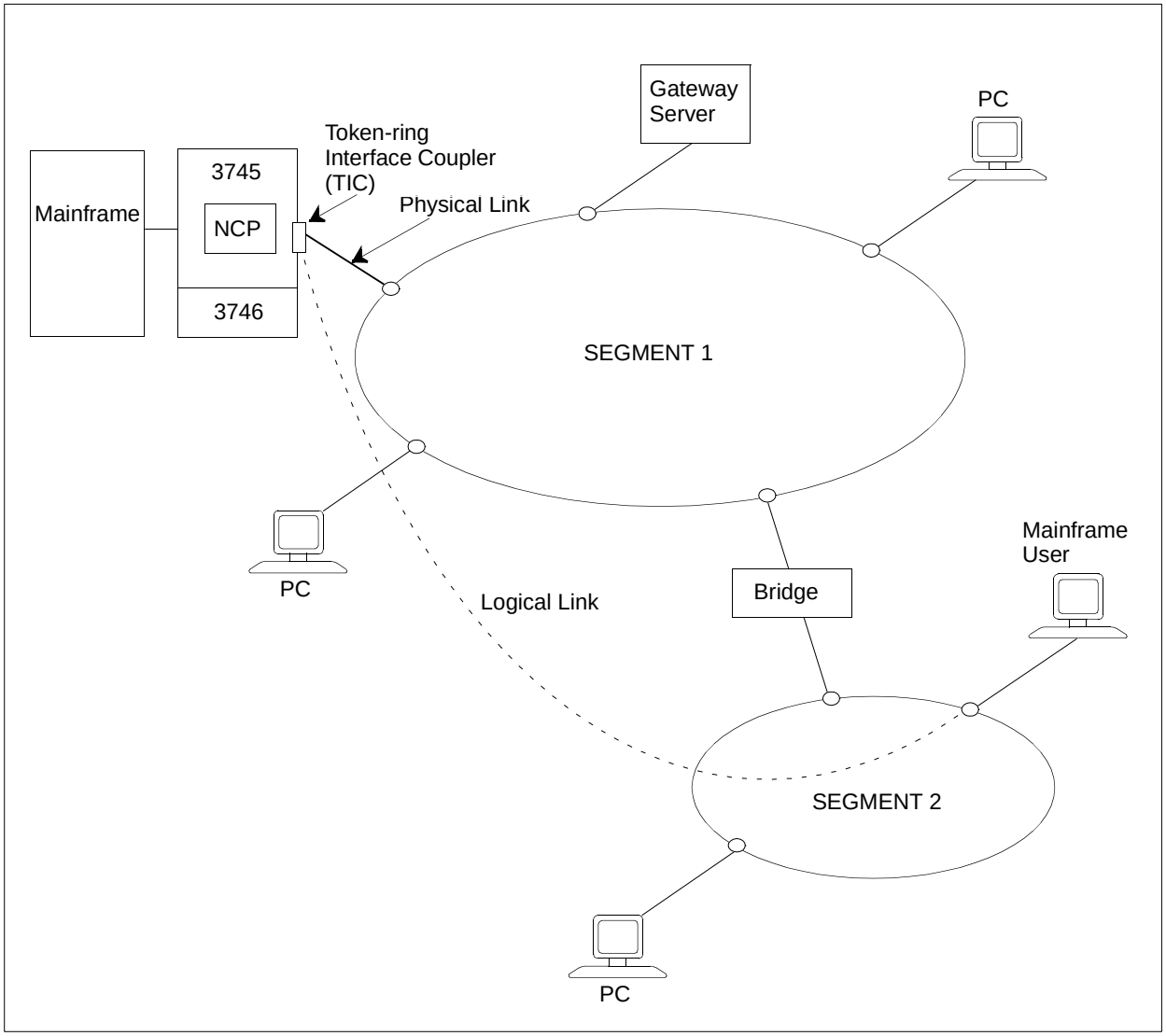
```
PROD-------------------- NCPView : Line Adapter Details --------- Page 1 of 1
Command ===>                                                  Function=Browse

Domain ..................... DOM1
NCP Name ................... NCP001
Adapter ID ................. LA04

General Adapter Details
  Type ..................... TSS
  Installed ................ YES
  Operative ................ YES
  Attached ................. NO
  Switched to this CCU ..... NO
Line Adapter Details
  Lowest Address in Range ... 16
  Highest Address in Range .. 31









 F1=Help      F2=Split     F3=Exit                              F6=Refresh
                           F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Displaying Token-ring Adapters and Links

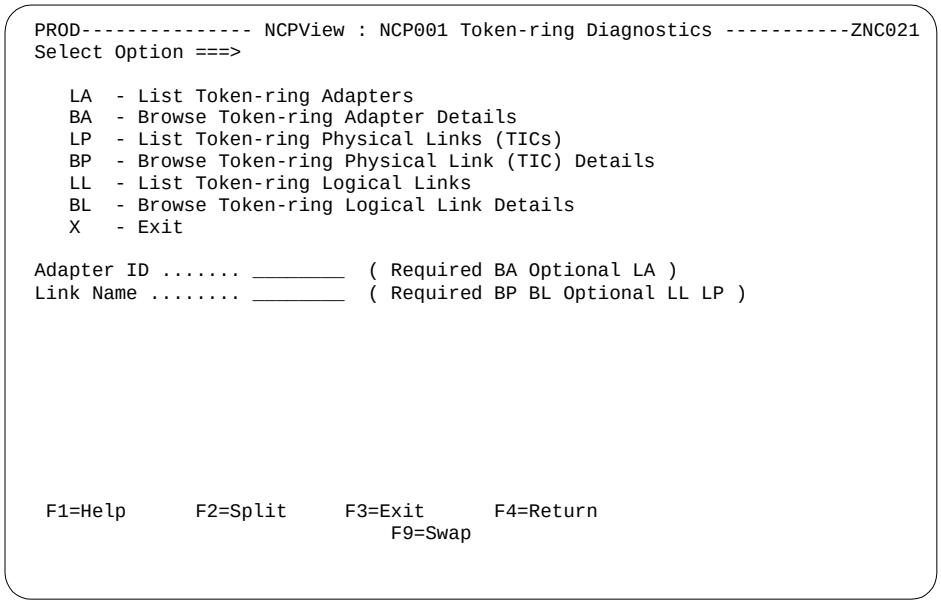
NCPView allows you to monitor adapters used to connect your communication controller to a token-ring network. If you are having problems communicating with your token-ring network, you can use the token-ring diagnostics menu to investigate token-ring adapters, logical links, and physical links. Figure 7-5 illustrates the token-ring physical and logical links between a user and the mainframe.

Figure 7-5. Token-ring Logical and Physical Links to the Mainframe



To access the token-ring diagnostics menu for an NCP, enter **TR** at the ===> prompt on the NCPView : Adapter Diagnostics menu for that NCP. The NCPView : Token-ring Support menu is displayed.

Figure 7-6. NCPView : Token-ring Diagnostics Menu



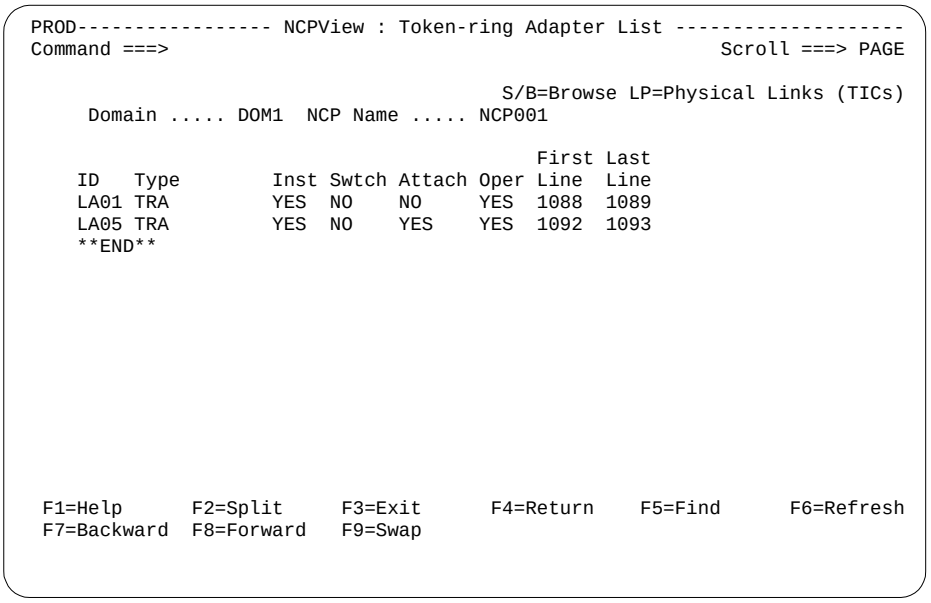
For details of the options and input fields available on this panel, press F1 (Help). The options are discussed in the following sections.

Listing Token-ring Adapters

You can list all the token-ring adapters on a specific NCP to find out if they are functioning.

To list token-ring adapters for an NCP, enter **TR** next to an NCP entry on the NCP monitor, or enter **LA** at the ===> prompt on the NCPView : Token-Ring Diagnostics menu for that NCP. A selection list of token-ring adapters for the specified NCP is displayed.

Figure 7-7. NCPView : Token-ring Adapter List

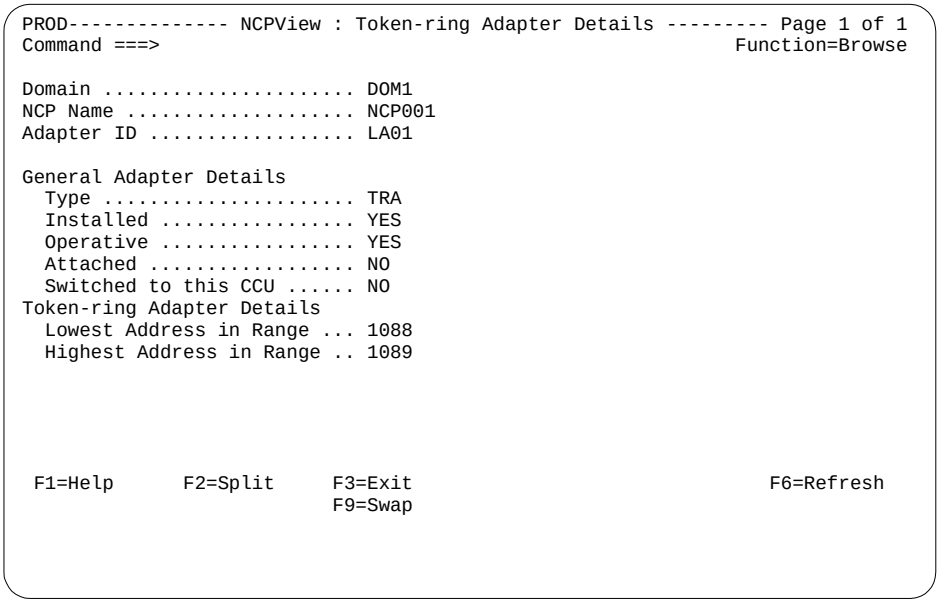


To list the physical links associated with any of the token-ring adapters listed, enter **LP** next to the required adapter in the selection list. For details about listing physical links for token-ring adapters, see *Listing Token-ring Physical Links*, on page 7-9.

Browsing Token-ring Adapter Details

To access detailed information about a specific adapter, type **S** or **B** next to the required adapter in the selection list, and press ENTER. The NCPView : Token-ring Adapter Details panel for that adapter is displayed.

Figure 7-8. The NCPView : Token-ring Adapter Details



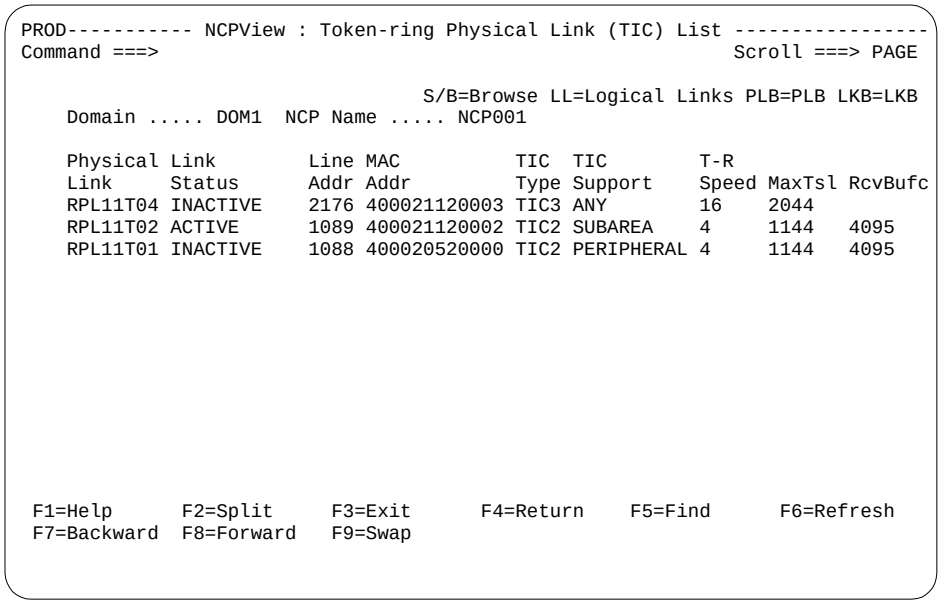
For details of the information displayed on this panel, press F1 (Help).

Listing Token-ring Physical Links

You can list the token-ring physical links for a Token-ring Interface Coupler (TIC) on a specific NCP. This allows you to monitor the status of the links to prevent or locate communication problems.

To list all token-ring physical links for an NCP, enter **TIC** next to an NCP entry on the NCP monitor, or enter **LP** at the ===> prompt on the NCPView : Token-ring Diagnostics menu for that NCP. A selection list of token-ring physical links for the specified NCP is displayed.

Figure 7-9. NCPView : Token-ring Physical Link (TIC) List



For details of the information displayed and actions available on this panel, press F1 (Help).

Browsing Physical Link Details

To access detailed information about a specific token-ring physical link, enter **S** or **B** next to the required link in the selection list. The NCPView : Token-ring Physical Link (TIC) Details panel for that link is displayed.

Figure 7-10. Token-ring Physical Link Details (Page 1 of 2)

```
PROD-------- NCPView : Token-ring Physical Link (TIC) Details -- Page 1 of 2
Command ===>                                                  Function=Browse

Domain ......................... DOM1
NCP Name ....................... NCP001
Physical Link .................. LINK001

TIC Details
  Line Address ................. 1089
  MAC Address of TIC ........... 400021120002
  Port Address ................. 1
  TIC Number ................... 1
  Token-ring Speed ............. 4
  Status of Physical Line ...... ACTIVE
  Maximum Outbound PIU Size .... 1144          (MXTSL)
  Maximum Inbound Frame Size ... 4095          (RCVBFC)
  Receive Congestion Counter ... 0
  Type of Station Supported .... SUBAREA
  TIC Type ..................... TIC2




 F1=Help      F2=Split     F3=Exit                              F6=Refresh
              F8=Forward   F9=Swap
```

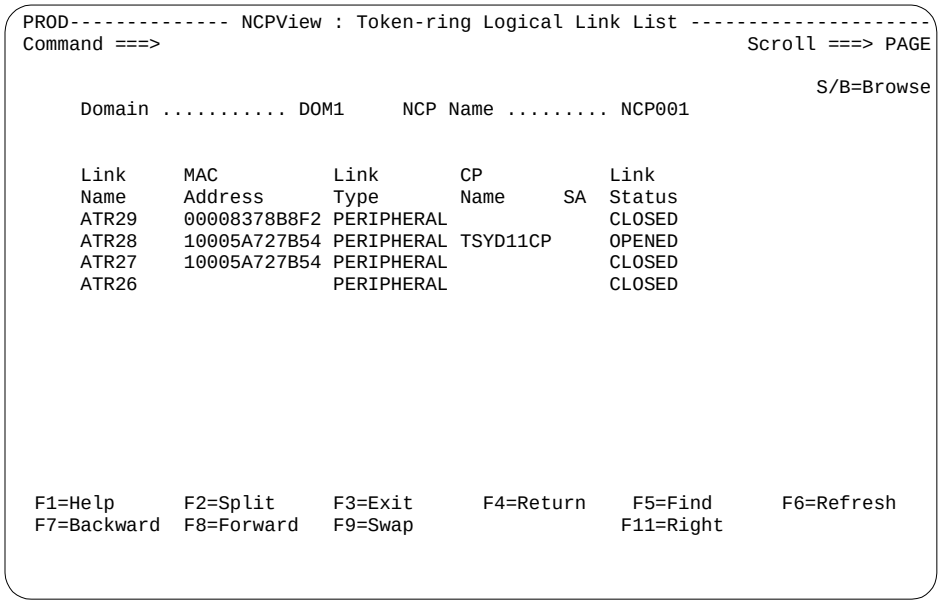
For details of the information displayed on this panel, press F1 (Help).

Listing Token-ring Logical Links and Browsing Details

You can list the token-ring logical links on a specific NCP. This allows you to monitor the status of the links to prevent or locate communication problems.

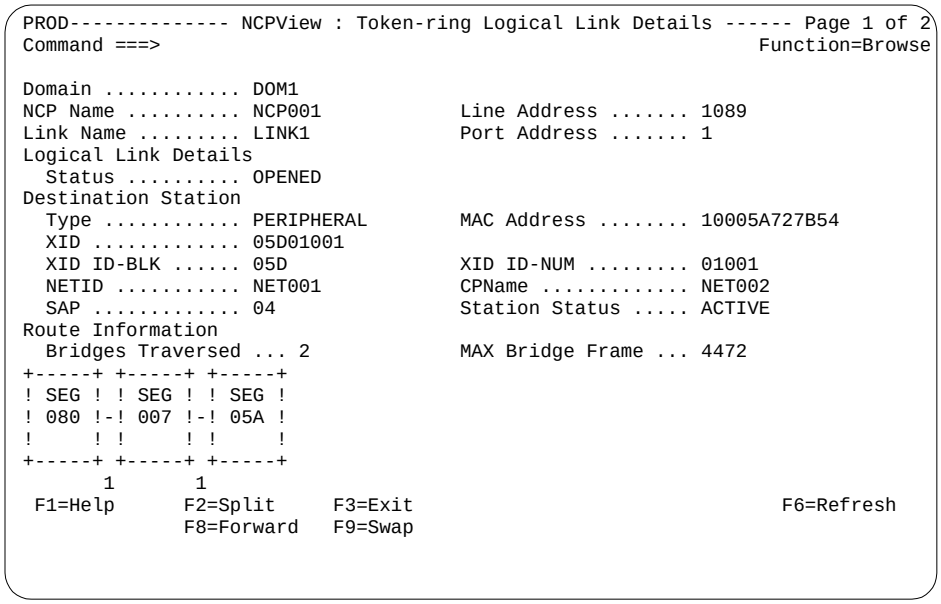
To list all token-ring logical links, enter **LL** at the ===> prompt on the NCPView : Token-Ring Diagnostics menu. A selection list of logical links for the specified NCP is displayed.

Figure 7-11. NCPView : Token-ring Logical Link List



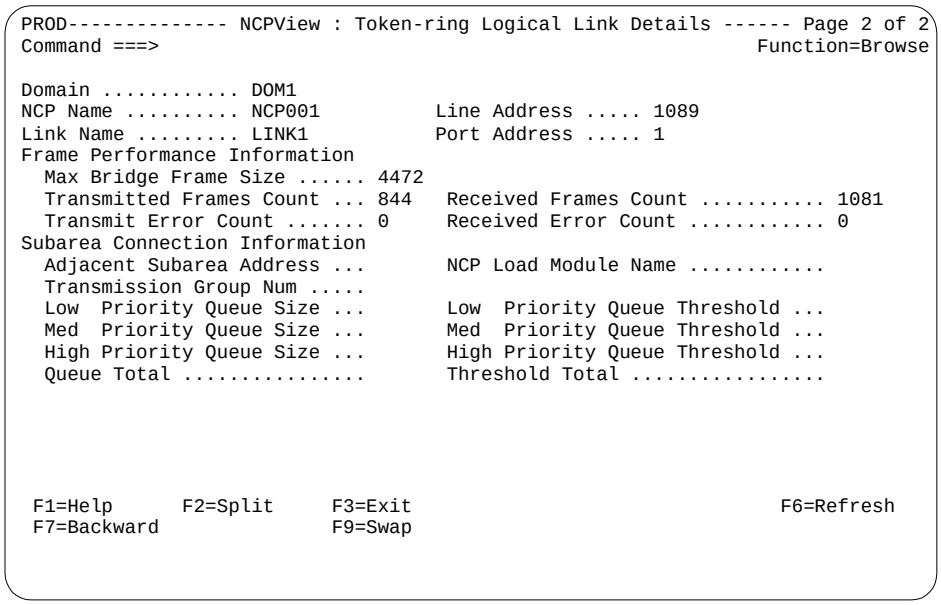
To access detailed information about a specific logical link, enter **S** or **B** next to the required link in the selection list. The NCPView : Token-ring Logical Link Details panel for that link is displayed.

Figure 7-12. NCPView : Token-Ring Logical Link Details (Page 1 of 2)



For details of the information displayed on this panel, press F1 (Help).

Figure 7-13. NCPView : Token-Ring Logical Link Details (Page 2 of 2)



Displaying Frame Relay Physical Lines and Their Subports

NCPView allows you to monitor frame relay physical lines on a 3745/3746-900 communications controller and the subports for each physical line. The Frame Relay Support Menu provides functions that list physical lines, display physical line details, and list the subports for a physical line.

To access these functions for an NCP, enter **FR** at the ===> prompt on the NCP : Adapter Diagnostics menu for that NCP. The NCPView : Frame Relay Diagnostics menu is displayed for the specified NCP.

Figure 7-14. NCPView : Frame Relay Diagnostics Menu

```
PROD---------------- NCP : NCP001 Frame Relay Diagnostics --------------ZNC023
Select Option ===>

   LP  - List Frame Relay Physical Lines
   BP  - Browse Frame Relay Physical Line Details
   LS  - List Subports for a Frame Relay Physical Line
   X   - Exit

Line Name ........ ________  ( Required BP LS Optional LP )









 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

Listing Frame Relay Physical Lines

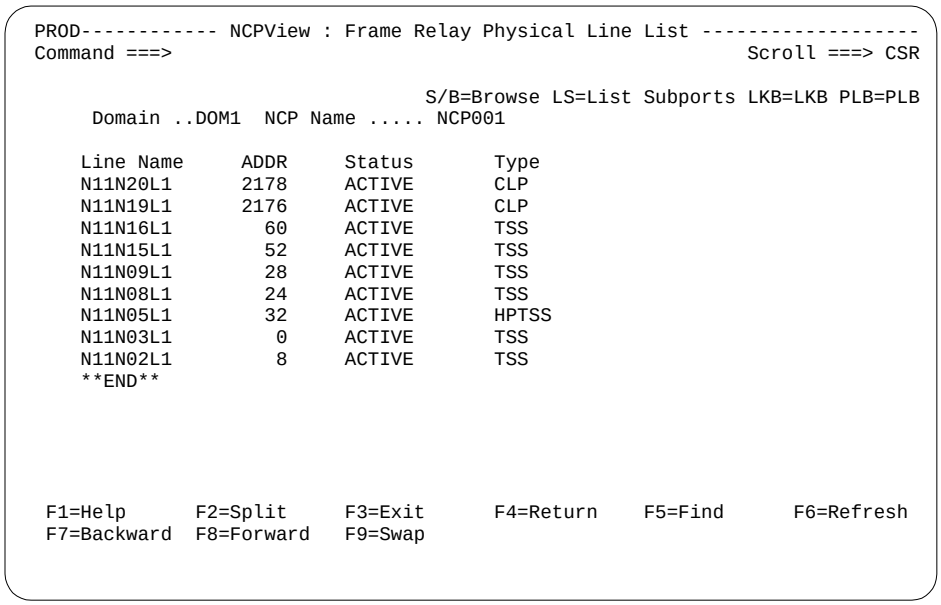
You can list frame relay physical lines and obtain basic information about all the frame relay physical lines on a 3745/3746-900 communications controller. To do this:

Step 1. Type **LP** at the ===> prompt on the Frame Relay Diagnostics menu.

Step 2. Optionally, type the line name for the physical line details that you want.

Step 3. Press ENTER. The NCPView : Frame Relay Physical Line List is displayed.

Figure 7-15. NCPView : Frame Relay Physical Line List



For details of the information displayed and actions available on this panel, press F1 (Help).

Displaying Details About Physical Lines

You can display detailed information about a frame relay physical line. To do this:

Step 1. Type **BP** at the ===> prompt on the Frame Relay Diagnostics menu.

Step 2. Type the line name for the physical line details that you want.

Step 3. Press ENTER. The first of three pages of detailed information, shown in Figure 7-16, is displayed. To display the other pages, press the F8 key.

Figure 7-16. NCPView : Frame Relay Physical Line Details (Page 1 of 3)

```
PROD------------ NCPView : Frame Relay Physical Line Details ----- Page 1 of 3
Command ===>                                                  Function=Browse

Domain ..................... DOM1
NCP Name ................... NCP001
Line Name .................. N11N16L1

General Line Details
  Address ............................. 60
  Status .............................. ACTIVE
  Adapter Type ........................ TSS
  Line Type ........................... FULL DUPLEX
  Port Address ........................ 106
  NRZI ................................ NO
  Inactivity Timer (TI) Interval ...... 60.0 (seconds)
  Clocking ............................ EXTERNAL
  Maximum Frame Size (MAXFRAME) ....... 2106 (bytes)
  Maximum DLCI Address ................ 433
  DYNWIND (nw) ........................ 4
  DYNWIND (dw) ........................ 0
  DYNWIND (dwc) ....................... 0
```

Figure 7-17. NCPView : Frame Relay Physical Line Details (Page 2 of 3)

```
Line Frame Statistics
                                      Transmitted        Received
   Total Frames .......................          0               0
   Total Retries ......................          0             N/A
   I-Frame Retries ....................          0             N/A
   Frame Format Errors ................        N/A               0
 Last PSA Error Status
        00130080        00130080        00130080        00130080

 Frame relay BAN Connection
   Source Address ..................... -
```

Figure 7-18. NCPView : Frame Relay Physical Line Details (Page 3 of 3)

```
  LMI DLCI 0 Details
  Outstanding Messages ................
  Local Management Interface .......... ANSI
  Echo Detection Mode ................. NONE
  Protocol Usage ...................... Network and User Side
  Level 3 Discards .................... 0
  Level 5 Discards .................... 0
  PU Status ........................... ACTIVE
                                        User            Network
  N391 ................................ 6               N/A
  N392 (generated/current) ............ 3/0             3/0
  N393 ................................ 0               0
  T391 Interval ....................... 10              N/A      (seconds)
  T392 Interval ....................... N/A             15       (seconds)
  Send Sequence No. ................... 155 (X'9B')     69 (X'45')
  Receive Sequence No. ................ 145 (X'91')     115 (X'73')

 F1=Help      F2=Split     F3=Exit                              F6=Refresh
              F8=Forward   F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Listing Subports (DLCIs) for a Physical Line

You can access basic details about subports (DLCIs) currently attached to a frame relay physical line from two panels:

- From NCPView : Frame Relay Physical Line List (see Figure 7-15), by typing **LS** beside the line name for which you want to list subports
- From the NCPView : Frame Relay Support Menu

To list subports and basic details, do this:

Step 1. Type **LS** at the ===> prompt on the Frame Relay Diagnostics menu.

Step 2. Type the line name for the physical line details that you want.

Step 3. Press ENTER. The NCPView : Frame Relay Subport List is displayed.

Figure 7-19. NCPView : Frame Relay Subport List

```
PROD---------------- NCPView : Frame Relay Subport List ----------------------
Command ===>                                                 Scroll ===> CSR

                                        S/B=Browse CUB=CUB LLB=LLB SCE=SCE
     Domain ..... DOM1      NCP Name ..... NCP001
     Line Name .. N11N16L1  Addr .. 60     Current DLCIs .. 5     Max .. 433

    ---DLCI---          Logical             Adj  Trans              ID    ID
      Dec  Hex  Type    Line      PU Name   S/A  Group   CP Name    Blk   Num
       16   10  SATESP  L11G1610  P11G1610  0      1
       17   11  FHSP              P11G0311
       18   12  FHSP              P11G0512
       19   13  FHSP              P11G0213
       20   14  FHSP              P11G0214
    **END**









 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed and actions available on this panel, press F1 (Help).

Displaying Terminating Equipment or Switching Equipment Details

You can display details about logical lines associated with DLCIs attached to a frame relay physical line.

The details vary depending on whether the DLCI is for a terminating equipment subport or a switching equipment subport.

If you enter **S** or **B** (Browse) on the Frame Relay Subport List next to a DLCI that is a terminating equipment subport (TESP), a peripheral node TESP (PNTESP), or a subarea subport (SATESP)**,** the first of three NCPView : Frame Relay Terminating Equipment Details panels is displayed (see Figure 7-20). The panels provide information about the logical line associated with a particular TESP DLCI (including PNTESP and SATESP).

Figure 7-20. Frame Relay Terminating Equipment Details Panel (Page 1 of 3)

```
PROD---------- NCPView : Frame Relay Terminating Equipment Details -----------
Command ===>                                                  Function=Browse

Domain ..................... DOM01
NCP Name ................... NCP001
Physical Line Name ......... N11N16L1
DLCI ....................... 16 (X'10')
DLCI Type .................. SATESP

Logical Link Connection Details
  Line Name ........................... L11G1610
  Line Status ......................... ACTIVE
  LLC Status .......................... OPENED
  PU Name ............................. P11G1610
  PU Status ........................... ACTIVE
  COMRATE (Priority) .................. FULL,1
  DYNWIND (nw) ........................ 4
  DYNWIND (dw) ........................ 1
  DYNWIND (dwc) ....................... 1
  T1 Timer ............................ 2.0
  T2 Timer (1) ........................ 1.0
  Max I-Frames before ACK (n3) ........ 2
```

Figure 7-21. Frame Relay Terminating Equipment Details Panel (Page 2 of 3)

```
Logical Link Connection Details (cont'd)
  Max PIUs per Frame (localt2) ........ 0
  BECNs Received ...................... 0
  FECNs Received ...................... 0
  DE Bits Set Received ................ 0
  Frames Discarded .................... 0

Destination Station Subarea Details
  Network ID .......................... NET001
  Subarea ............................. 0
  DSAP ................................ 04
  Transmission Group .................. 1
  IDBLK-IDNUM ......................... N/A
```

Figure 7-22. Frame Relay Terminating Equipment Details Panel (Page 3 of 3)

```
  Destination Station Subarea Details (cont'd)
  CP Name ..........................
  BAN Connection MAC Address .........

Frame Statistics                      Transmit          Receive
  DLCI Status ........................ ACTIVE            ACTIVE
  Frames Count ....................... 0                 0
  Minimum Frame Size ................. 65535             65535
  Maximum Frame Size ................. 0                 0
  Outstanding Frames Count ........... 0                 N/A
  Working Window (Frames w/o ACK) ..... 127               N/A
  I-Frames Received .................. N/A               2

 F1=Help      F2=Split     F3=Exit                              F6=Refresh
              F8=Forward   F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Displaying Frame Relay Switching Equipment Details

If you enter **S** or **B** (Browse) on the Frame Relay Subport List next to a DLCI that is a switching equipment subport, the first of three NCPView : Frame Relay Switching Equipment Details panels is displayed (see Figure 7-23). The panels provide information about the logical line associated with a particular FHSP DLCI.

Figure 7-23. Frame Relay Switching Equipment Details Panel (Page 1 of 3)

```
PROD----------- NCPView : Frame Relay Switching Equipment Details ------------
Command ===>                                                  Function=Browse

Domain ..................... DOM1
NCP Name ................... NCP001

Connection Details
  Subport Connection ................. SUBPORTB-SUBPORTA
  Buffer Size ........................ 136
  Maximum Frame Size (MAXFRAME) ..... 2106

Outbound Buffer Queues                SUBPORTB          SUBPORTA
  DLCI ............................... 17 (X'11')       20 (X'14')
  Buffers in Outbound Queue .......... 0                 0
  Queue Limit ........................ 140               140
  BECNs Set .......................... 0                 0
  FECNs Set .......................... 0                 0
  DE Bits Set ........................ 0                 0
  Frames Sent ........................ 0                 0
  Frames Discarded ................... 0                 0
  Minimum Frame Size Sent ............ 65535             65535
  Maximum Frame Size Sent ............ 0                 0
```

Figure 7-24. Frame Relay Switching Equipment Details Panel (Page 2 of 3)

```
Subport Details
                                        Subport A          Subport B
  DLCI ................................ 20 (X'14')         17 (X'11')
  DLCI Send/Receive Status ............ ACTIVE/ACTIVE      ACTIVE/ACTIVE
  Line Name ........................... N11N03L1           N11N16L1
  Line Address ........................ 0                  60
  Line Status ......................... ACTIVE             ACTIVE
  Line Type ........................... TSS                TSS
  PU Name ............................. P1131614           P11G0311
  PU Status ........................... ACTIVE             ACTIVE
  Active Routing Partner Linkname ..... N11N16L1          N11N03L1
  Active Routing Partner DLCI ......... 17 (X'11')        20 (X'14')
  Defined Routing Partner Linkname .... N11N16L1          N11N03L1
  Defined Routing Partner DLCI ........ 17 (X'11')        20 (X'14')
  Backup Routing Partner Linkname .....
  Backup Routing Partner DLCI .........
```

Figure 7-25. Frame Relay Switching Equipment Details Panel (Page 3 of 3)

```
 Subport Details                        Substitute         Substitute
                                        Subport A          Subport B
  DLCI ................................
  DLCI Send/Receive Status ............
  Line Name ...........................
  Line Address ........................
  Line Status .........................
  Line Type ...........................
  PU Name .............................
  PU Status ...........................
  Active Routing Partner Linkname .....
  Active Routing Partner DLCI .........
  Defined Routing Partner Linkname ....
  Defined Routing Partner DLCI ........
  Backup Routing Partner Linkname .....
  Backup Routing Partner DLCI .........

 F1=Help      F2=Split     F3=Exit                          F6=Refresh
              F8=Forward   F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

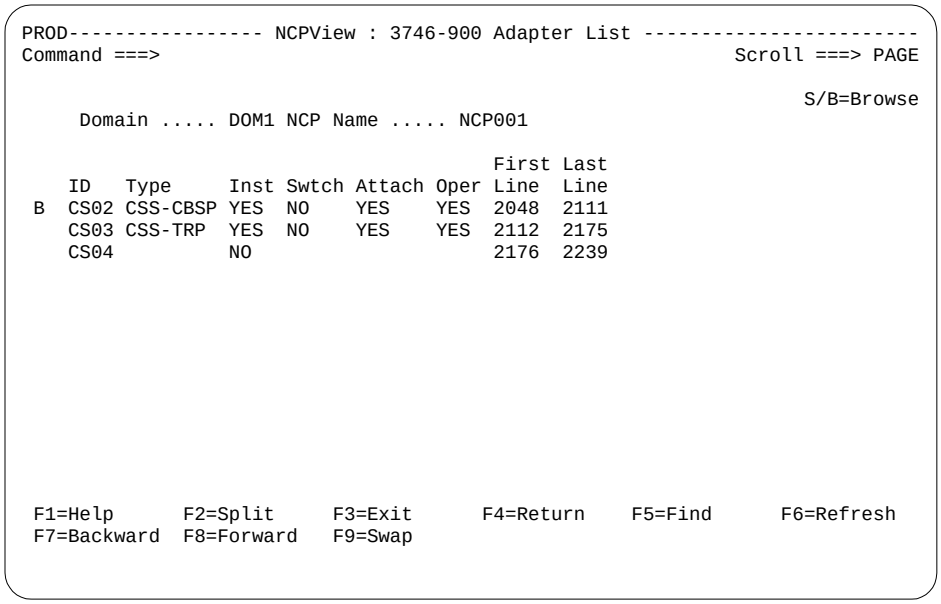
Displaying 3746-900 CSS Adapters

NCPView allows you to monitor adapters used to connect your communication controller to a 3746-900 Connectivity Subsystem (CSS). You can use the 3746-900 CSS support menu to monitor your CSS adapters.

You can obtain a list of all the CSS adapters on your NCPs to investigate problems and monitor communication.

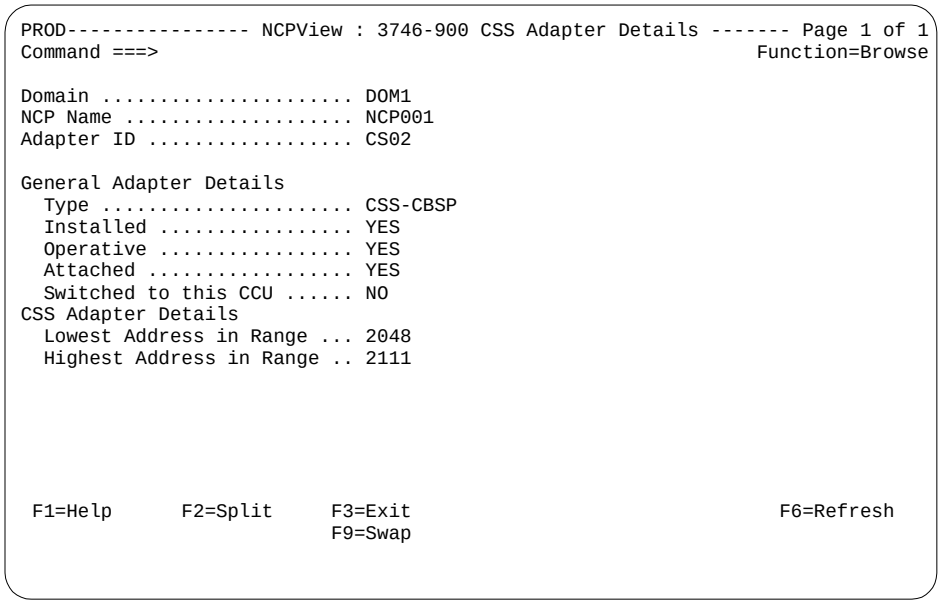
To list all CSS adapters for a specified NCP, enter **CSS** at the ===> prompt on the NCPView : Adapter Diagnostics menu for that NCP. The NCPView : 3746-900 Adapter List is displayed for the specified NCP.

Figure 7-26. Selection List of CSS Adapters



To access detailed information about a specific CSS adapter, enter **S** or **B** (Browse) next to the required adapter in the selection list. The NCPView : 3746-900 CSS Adapter Details panel for that adapter is displayed.

Figure 7-27. NCPView : 3746-900 CSS Adapter Details



For details of the information displayed on this panel, press F1 (Help).

8

Monitoring Other NCP Information

This chapter describes how to use NCPView to monitor specific aspects of your NCPs such as SNI information, transmission groups, and virtual routes.

This chapter discusses the following topics:

- Monitoring SNA Network Interconnection (SNI) Information
- Monitoring Transmission Groups
- Monitoring Virtual Route Information
- Monitoring NCP Internet Protocol (IP) Router Statistics

Monitoring SNA Network Interconnection (SNI) Information

SNI uses gateways to connect independent networks. If you are using SNI to connect networks, you need to monitor the half-session control blocks (HSCBs) and gateway network addressable units (GWNAUs) for each connection. NCPView allows you to perform this monitoring task using the SNI information menu.

Listing and Browsing Network and HSCB Count Attribute Information

When you establish a session with another network connected using SNI, two HSCBs are used, one HSCB in each network. The number of HSCBs is defined when an NCP is generated. NCPView allows you to monitor the number of HSCBs being used for cross-network session to ensure that there are enough for future sessions to be established.

To display HSCB information for an NCP, complete the following steps:

Step 1. Enter **/NCPMON** at a ===> prompt. The NCP monitor is displayed.

Step 2. Enter **IN** next to an NCP entry on the NCP monitor. The NCPView : Network List is displayed. This is a selection list of networks and their associated HSCB usage.

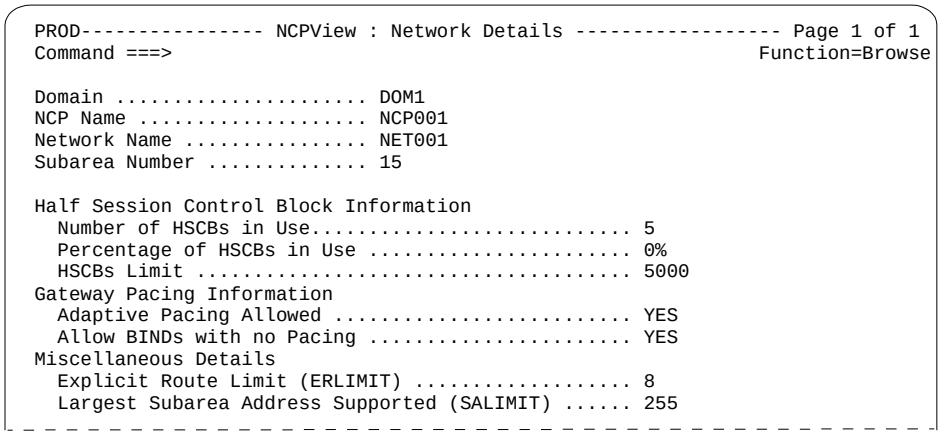
Figure 8-1. NCPView : Network List

```
PROD---------------------- NCPView : Network List ----------------------------
Command ===>                                                 Scroll ===> PAGE

                                                          S/B=Browse LN=GWNAUs
     Domain ..... DOM1 NCP Name ..... NCP001

                 +-------HSCBs-------+               ACTPU Adaptive Allow no
    Network   SA In Use% In Use  Limit SALim ERLim Allowed   Pacing   Pacing
    NET001    15     0%       5   5000   255     8     YES      YES      YES
    NET002     1    20%       2     10   255     8      NO      YES      YES
    NET003     1     0%       1   5000   255     8      NO      YES      YES
    **END**
```

For details of the information displayed and actions available on this panel, press F1 (Help).

To access detailed information about the HSCB usage for a specific network, enter **S** or **B** next to the required network on the NCPView : Network List. The NCPView : Network Details panel for the selected network is displayed.

Figure 8-2. NCPView : Network Details Panel



For details of the information displayed on this panel, press F1 (Help).

Listing Gateway Network Addressable Units (GWNAUs)

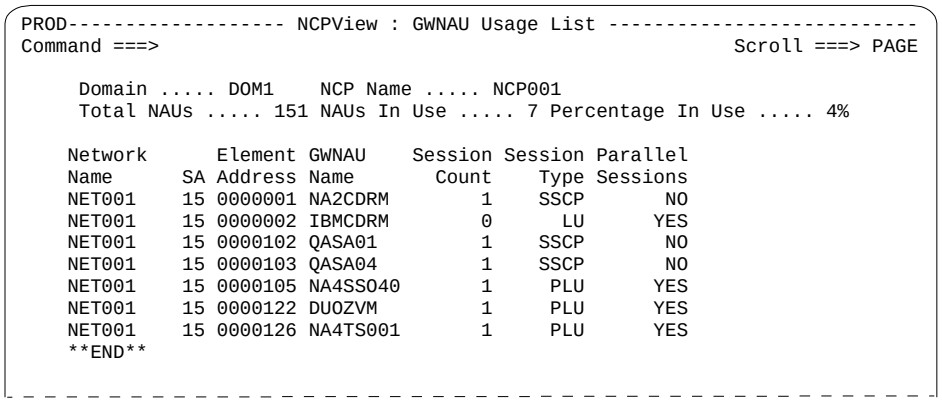
When you establish a session with a resource in another network connected using SNI, each resource has an address allocated to it in a GWNAU. The number of GWNAUs is defined when an NCP is generated. NCPView allows you to monitor the number of GWNAUs being used for cross-network sessions to ensure that there are enough for future sessions to be established.

Caution

The LN option requires a large amount of storage to be obtained from the NCP to be provided. Thus the request may take minutes to complete.

To list GWNAUs for an NCP, enter **LN** next to the required network on the NCPView : Network List. The NCPView : GWNAU Usage List is displayed for the specified NCP.

Figure 8-3. NCPView : GWNAU Usage List



For details of the information displayed on this panel, press F1 (Help).

Monitoring Transmission Groups

Transmission groups link adjacent subarea nodes so that information can be routed. There can be up to 255 transmission groups between two subarea nodes. NCPView allows you to monitor the transmission groups to ensure that congestion does not occur.

Listing and Browsing Transmission Group Information

The list and browse function is used to monitor the type of link, status, and queue information of each transmission group in your NCPs. This allows you to pinpoint areas of congestion.

To access transmission group information for an NCP, enter **TG** next to an NCP entry on the NCP monitor (/NCPMON). The NCPView : Transmission Group List is displayed for the specified NCP.

Figure 8-4. NCPView : Transmission Group List

```
PROD----------------- NCPView : Transmission Group List ----------------------
Command ===>                                                 Scroll ===> PAGE

                                                                    S/B=Browse
     Domain ..... DOM1 NCP Name ..... NCP001

                    Low    Low    Medium Medium High   High
    Network  SA  TG  Queued Thresh Queued Thresh Queued Thresh  State
    NET001   1   1   0      5000   0      5000   0      5000    OPERATIONAL
    NET001   2   1   0      5000   0      5000   0      5000    INOPERATIVE
    NET002   12  10  0      50000  0      50000  0      50000   OPERATIONAL
    NET003   255 1   0      5000   0      5000   0      5000    OPERATIONAL
    **END**
```

For details of the information displayed on this panel, press F1 (Help).

To access detailed information about the transmission groups for a specific network, enter **S** or **B** next to the required network in the selection list. The NCPView : Transmission Group Details panel for the selected network is displayed.

Figure 8-5. NCPView : Transmission Group Details

```
PROD-------------- NCPView : Transmission Group Details ---------- Page 1 of 1
Command ===>                                                    Function=Browse

Domain ..................... DOM1
NCP Name ................... NCP001
Network Name ............... NET001
Subarea .................... 1
Transmission Group ......... 1

Transmission Group General Information
  Type ..................... CHANNEL
  State .................... OPERATIONAL

Queue Information                    Queued         Threshold
  Low Priority PIU Byte Count ...... 0              5000
  Medium Priority PIU Byte Count ... 0              5000
  High Priority PIU Byte Count ..... 0              5000
  Total Byte Count ................. 0              20000
```

For details of the information displayed on this panel, press F1 (Help).

Monitoring Virtual Route Information

Virtual routes are used to connect two subarea nodes. By monitoring these routes, you can detect failures and congestion on the connection.

In SNA terms, a virtual route can be either a logical connection between two subarea nodes, or a logical connection within a particular subarea node for the purpose of intranode sessions.

The virtual route between subarea nodes does the following:

- Places a transmission priority on the explicit route between nodes
- Applies sequential numbering to PIUs to ensure data integrity
- Uses virtual route pacing to ensure a controlled flow of PIUs along the virtual route

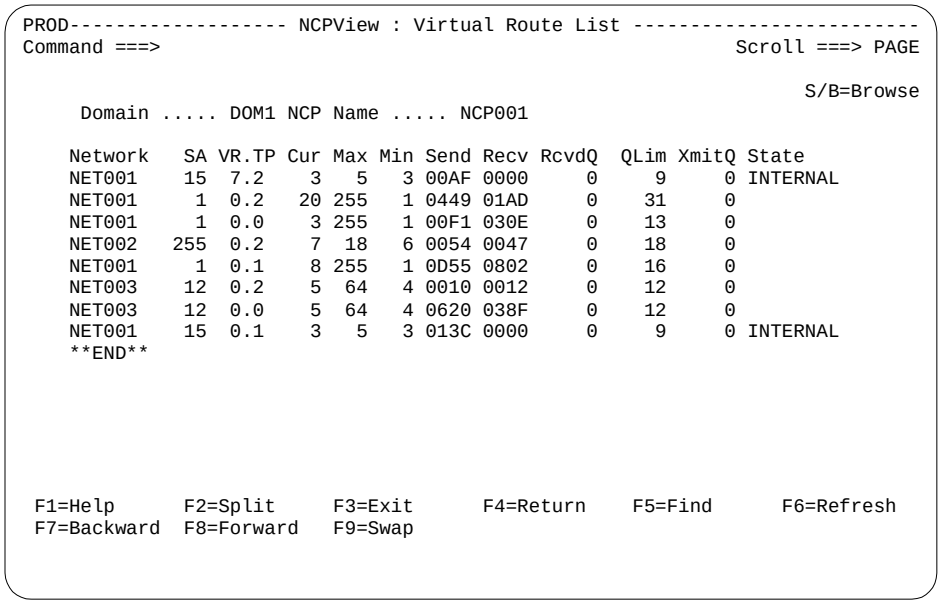
NCPView allows you to list all of the virtual routes and view virtual routing and flow control information for each route on the list.

Listing and Browsing Virtual Route Information

By listing and browsing virtual route information, you can monitor the state of the route and whether or not there is congestion on the route.

To display a list of networks and their virtual routes, enter **VR** next to an NCP entry on the NCP monitor (/NCPMON). The NCPView : Virtual Route List is displayed for the selected NCP.

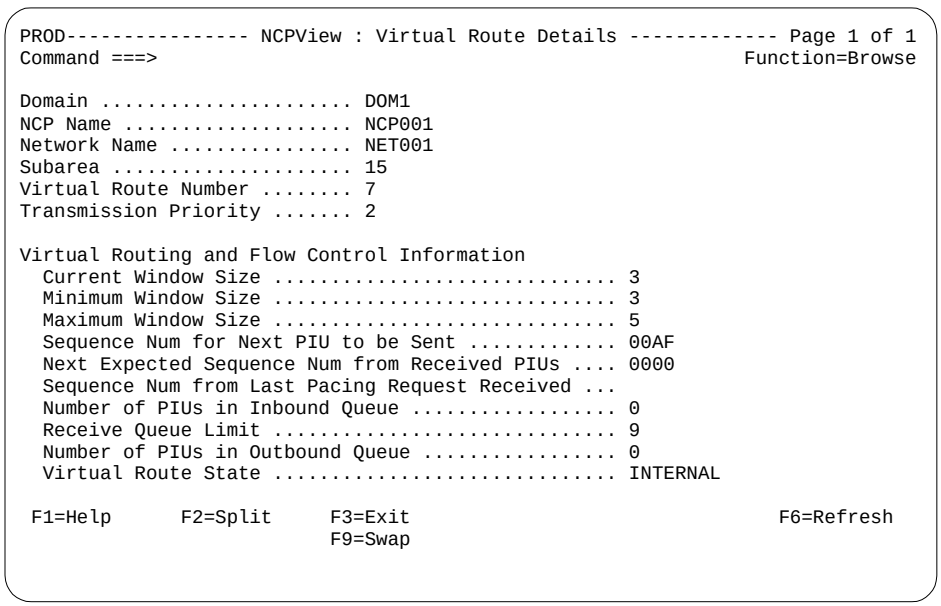
Figure 8-6. NCPView : Virtual Route List



For details of the information displayed on this panel, press F1 (Help).

To access detailed information about the virtual routes for a specific network, enter **S** or **B** next to the required network in the selection list. The NCPView : Virtual Route Details panel for the selected network is displayed.

Figure 8-7. NCPView : Virtual Route Details



For details of the information displayed on this panel, press F1 (Help).

Monitoring NCP Internet Protocol (IP) Router Statistics

If your NCP is acting as an IP router to connect to an internet environment, you need to monitor the movement of information, as datagrams, to that network. NCPView allows you to view statistics for the transmission of datagrams through the NCP IP router using the IP Router Statistics panel.

Note

IP requires an NCP level of V6R1 or higher.

To access IP router statistics for a specified NCP, complete the following steps:

Step 1. Enter **/NCPMON** at a ===> prompt. The NCP monitor is displayed.

Figure 8-8. NCP Monitor

```
PROD------------------- Status Monitor : NCP Monitor -----------------PROD-0001
Command ===>                                                 Scroll ===> CSR

     AL=Alerts AD=Adapters BB=Buffers PL=Pools H=History SM=Summary ?=List Cmds
                                          Buffer Monitor            Next
    System   Name     Model    SubArea CCU% Usage% Status      Alerts Sample
    PROD     NCP001   3745-17A      16    5     20 Active           0 11:23
    PROD     NCP002   -              -    -      - Inactive         -  -
    **END**
```

Step 2. Enter **IP** next to an NCP entry on the NCP monitor. The NCPView : NCP IP Router Statistics panel is displayed.

Figure 8-9. NCPView : NCP IP Router Statistics Panel (Page 1 of 3)

```
PROD----------------- NCPView : NCP IP Router Statistics ----------Page 1 of 3
Command ===>                                                 Scroll ===> PAGE

Domain ..................... DOM1
NCP Name ................... NCP001

IP Router Configuration Details
  IP Addr of TCP/IP Owning Host ............... 1.2.3.4
  IP Addr of Interface to TCP/IP Owning Host ... 1.2.4.3
  Max Buffers in IPPOOL ....................... 32575
  Max IP Burst Rate ........................... 1600
IP General Datagram Information        IP Fragmentation Information
  Total Rcvd ........... 100000        Datagrams Fragmented .... 0
  Bad Checksum ......... 0             Datagrams Failed Frag ... 0
  Bad Data Lengths ..... 0             Fragments Created ....... 0
  Bad Header Lengths ... 0             Fragments Received ...... 0
  Forwarded ............ 100000        Fragments Discarded ..... 0
  Not Forwarded ........ 0             Datagrams Reassembled ... 0
  Sent Same as Rcvd .... 0             Frags Disc Congestion ... 0
  Rcvd Bad Dest Addr ... 0             Datagrams Disc MTU ...... 0
  TTL Exceeded ......... 0

 F1=Help      F2=Split     F3=Exit      F4=Return                F6=Refresh
              F8=Forward   F9=Swap
```

Figure 8-10. NCPView : NCP IP Router Statistics Panel (Page 2 of 3)

```
ICMP Messages Received                   UDP Datagram Information
  Total Received ......... 12345         Total Received ...... 0
  Received ICMP Error .... 0             Rcvd Unknown Dest ... 0
ICMP Messages Sent                       Discarded ........... 0
  Dest Unreachable ....... 0
  Time Exceeded .......... 0
  Parameter Errors ....... 0
  Source Quench .......... 0
  Redirected ............. 0
  Echo Replies ........... 1435
  Timestamp Replies ...... 0
  Address Mask Replies ... 0
```

Figure 8-11. NCPView : NCP IP Router Statistics Panel (Page 3 of 3)

```
Route Request Datagrams
  Add Route Requests Rcvd ........ 0
  Failed Add Route Requests ...... 0
  Delete Route Requests Rcvd ..... 0
  Failed Delete Route Requests ... 0
  Change Route Requests Rcvd ..... 0
  Failed Change Route Requests ... 0
Data Sent to NCPROUTE
  Active Sent to NCPROUTE ........ 0
  Inactive Sent to NCPROUTE ...... 0
  RIP Broadcast Frames ........... 0
  SNMP Frames .................... 0
NCP Reset State Counters Due to:
  Loss of NCPROUTE Host .......... 0
  UDP Datagram with Bad Chksum ... 0

 F1=Help      F2=Split     F3=Exit      F4=Return                F6=Refresh
 F7=Backward               F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Note

All the fields on page 3 of the NCP IP Router Statistics panel are set for NCP version 7R1 onwards only.

Part III

Managing Your Network

9

Displaying and Controlling SNA Resources

This chapter provides information on using the Network Control System (NCS) to display and control SNA resources.

This chapter discusses the following topics:

- Displaying Resources
- Displaying a Particular Node
- Displaying Resources by Name
- Displaying APPN Resources by Type
- Displaying Subarea Resources
- Display Options
- Finding Out More About the Displayed Nodes
- Controlling Nodes

Displaying Resources

NCS allows you to monitor and control SNA network resources.

Accessing NCS

To access NCS, enter **/SNADIAG** at the Select Option ===> prompt on any panel. The SNA : Diagnosis Menu is displayed.

Figure 9-1. SNA : Diagnosis Menu

```
PROD------------------------ SNA : Diagnosis Menu ---------------------/SNADIAG
Select Option ===>

   N   - Display SNA Node                                    SNANODE
   L   - List SNA Resources                                  SNALIST
   A   - APPN Diagnosis                                      SNAAPPN
   SA  - Subarea Diagnosis                                   SNASUBA
   NCD - NCP Dump Functions                                  NCPDUMP
   NCP - List NCPs                                           -
   D   - Device Support Diagnosis                            DEVSUPP
   S   - Session Tracking Diagnosis                          SNASESS
   CA  - Create an Alert                                     -
   X   - Exit

Node Name ...                                                  (Required N L )
Link Name ...                                                  (Optional N L )









 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

For details of the NCS options available on the SNA : Diagnosis Menu, press F1 (Help). The following sections describe these options.

Displaying a Particular Node

You can access the display of a particular node (resource) or, in the case of multiple resource types, display a resource selection list to choose a resource to display. To do this, follow these steps:

Step 1. Type **N** at the ===> prompt on the SNA Network Management : Diagnostics Menu.

Step 2. Type the name of the node in the Node Name field. The name can be up to 17 characters long and include the network qualifier (for example, *netid.nodename* or **.nodename*).

Step 3. Optionally, in the Link Name field, type the INMC name of the NetMaster for SNA system that the display is viewed from. This field is preset to one of these names:

a. The name of the local system, by default.

b. If the option I - Select INMC Links was used to select an INMC link, the name of the first selected INMC link on that list.

Step 4. Press ENTER.

Step 5. If the resource selection list is displayed (for example, if the resource exists as both a CDRM and an adjacent CP), enter **S** next to the resource that you want to display. (See Figure 9-2.)

The resulting displays depend on the number and type of resources in the network:

- If the resource is either an APPN resource or a session-oriented resource, such as an application (APPL) or a cross-domain resource (CDRSC), the NCS : Resource Display is presented (Figure 9-3). The format of the NCS : Resource Display varies, depending on the resource type.
- If the resource is a Directory Entry, the NCS : APPN Directory Entry Display is presented (Figure 9-12).
- If not, the NCS : Node Display is presented (Figure 9-5). This is a graphical representation that varies, depending on the resource type.
- This display shows a maximum of five levels of hierarchy.

Resource Selection

The Resource Selection List, shown in Figure 9-2, is displayed when there are multiple resource types, as in the case of an interchange node, for example XYZ1VTM1. This is possible in a NetMaster for SNA system that includes APPN support (IBM ACF/VTAM 4.1 and higher).

Figure 9-2. NCS : Resource Selection List

```
PROD---------------- NCS : Resource Selection for XYZ1VTM1 --------------------
Command ===>                                                 Scroll ===> PAGE

                                                                     S/=Select
    Resource Name    Resource Type
    NET.XYZ1VTM1     CDRM
    NET.XYZ1VTM1     HOST CP
    **END**

 F1=Help      F2=Split     F3=Exit                 F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed on the NCS : Resource Selection List, press F1 (Help).

Note

The information displayed can vary, depending on the VTAM level your system is running on, and on the types of resources available in your network.

To display a particular resource, enter **S** beside the resource name on the selection list. The NCS : Node Display or NCS : Resource Display panel for the selected resource is displayed.

Displaying APPN and Session-oriented Resources

The format of the NCS : Resource Display varies, depending on the resource type, which can be any of the following:

- Control Points (adjacent or host)
- Adjacent Control Point Major Nodes
- RTP Major Nodes
- TRL Major Nodes

- Applications and CDRSCs
- PU T2.1 for an RTP pipe
- PU T2.1 for a TRLE ULP PU

Example 1

The following is an example for a host CP.

Figure 9-3. NCS : Resource Display for a Host CP

```
PROD---------------------- NCS : Resource Display --------------------------
Command ===>                                                Scroll ===> PAGE

                                                                    S/=Select
   Information for NET.XYZ1VTM1
    Node Type ............ HOST CP
    Status ............... ACT/S       Desired ................ ACTIV
    Major Node ........... VTAMSEG     Type ................... APPL
    Registration Type .... NONE
    Job Name ............. VTAM        Step Name .............. VTAM

   Sessions
    Name              Status     SID              Send Recv VR TP ALS
    NET.TSYD11CP      ACTIV/CP-S CD2F3C0010063953 0756 0001  0  1
    NET.TSYD11CP      ACTIV/CP-P E4DF0997D31EB12F 0001 0756  0  1
    X390.USS3270      ACTIV/CP-S CD2F3C00100632FF 0EC5 0001  0  1
    X390.USS3270      ACTIV/CP-P D18BB71D1212DC58 0001 0ED2  0  1
    XDINET1.TSYD13CP  ACTIV/CP-S CD2F3C00100602C2 0001 0001  0  1
    XDINET1.TSYD13CP  ACTIV/CP-P CF5F82F8650C1E09 0002 0002  0  1
   **END**


F1=Help      F2=Split     F3=Exit                  F5=Find      F6=Refresh
F7=Backward  F8=Forward   F9=Swap                 F11=VTAMDisp
```

For details of the information displayed and the actions and commands available on the NCS : Resource Display for a host CP, press F1 (Help).

Example 2

The following is an example for an RTP pipe.

Figure 9-4. NCS : Resource Display for an RTP Pipe

```
PROD---------------------- NCS : Resource Display --------------------------
Command ===>                                                Scroll ===> PAGE

                                                                   S/=Select
   Information for NET.XYZ1VTM1
    Node Type ............ HOST CP
    Status ............... ACT/S       Desired ................ ACTIV
    Major Node ........... VTAMSEG     Type ................... APPL
    Registration Type .... NONE
    Job Name ............. VTAM        Step Name .............. VTAM

   Sessions
    Name              Status     SID              Send Recv VR TP ALS
    NET.TSYD11CP      ACTIV/CP-S CD2F3C0010063953 0756 0001  0  1
    NET.TSYD11CP      ACTIV/CP-P E4DF0997D31EB12F 0001 0756  0  1
    X390.USS3270      ACTIV/CP-S CD2F3C00100632FF 0EC5 0001  0  1
    X390.USS3270      ACTIV/CP-P D18BB71D1212DC58 0001 0ED2  0  1
    XDINET1.TSYD13CP  ACTIV/CP-S CD2F3C00100602C2 0001 0001  0  1
    XDINET1.TSYD13CP  ACTIV/CP-P CF5F82F8650C1E09 0002 0002  0  1
   **END**


F1=Help      F2=Split     F3=Exit                  F5=Find      F6=Refresh
F7=Backward  F8=Forward   F9=Swap                 F11=VTAMDisp
```

For details of the information displayed and the actions and commands available on the NCS : Resource Display for an RTP pipe, press F1 (Help).

Displaying Resource Components

To display a resource component from the NCS : Resource Display panel, enter **S** on the selection list beside the resource component you want. One of the following displays results:

- The NCS : Resource Display panel for the selected resource component is displayed.
- If the resource component is an interchange node, a selection list of resource types is displayed.

Displaying Native VTAM Information

The VTAMDisp command provides a native VTAM display of the entire resource. The additional information provided includes all subcomponents for the selected resource.

To display this additional information from the Resource Display panel, press F11 (VTAMDisp).

Displaying a Directory Entry from the Resource List

If the NCS : Resource Selection List contains a directory entry, and you select this resource type from the list, the NCS : APPN Directory Entry Display panel is displayed (see Figure 9-12 on page 9-14).

This panel is also displayed if you select option **AD** - Display APPN Directory Information from the NCS : APPN Menu (see the section, *Displaying APPN Directory Information*, on page 9-14).

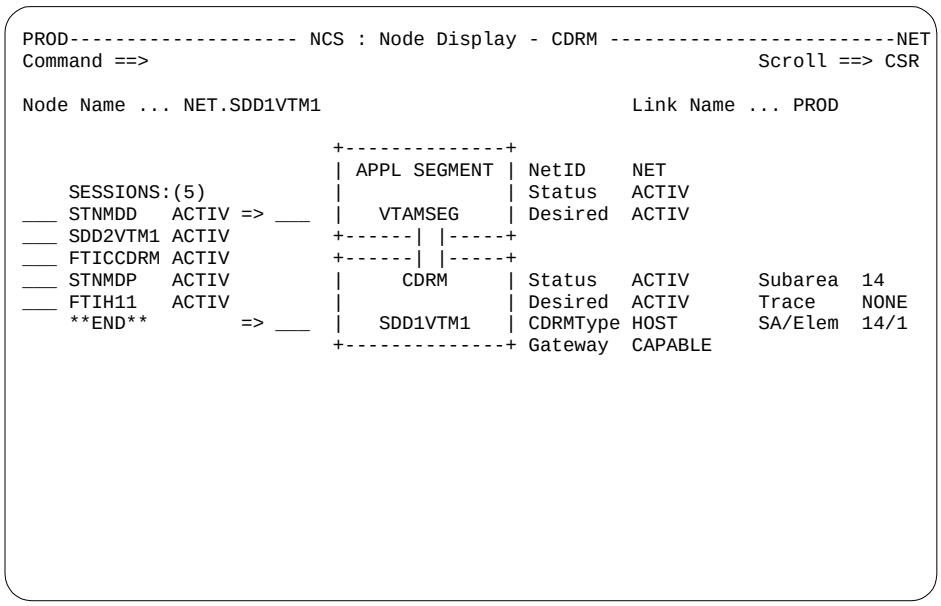
Displaying Non-APPN Resources

The NCS : Node Display (/SNANODE), shown in Figure 9-5, is presented for a particular node. This display can result if the node that you specified, when you selected option N - Display SNA Node (from the SNA : Diagnosis Menu), is of only one resource type.

Note

If your terminal supports extended attributes such as color and highlighting, then you get a different presentation of the node display.

Figure 9-5. NCS : Node Display



For details of information provided and actions available on the NCS : Node Display, press F1 (Help).

Displaying Resources by Name

To display a list of SNA resources whose name starts with a specified prefix, do the following on the SNA : Diagnosis Menu:

Step 1. Type **L** at the ===> prompt.

Step 2. Type a prefix in the Node Name field and press ENTER. The NCS : SNA Resource List panel is displayed.

Note

The prefix must not be a network-qualified name.

Figure 9-6. NCS : SNA Resource List

```
PROD----------------- NCS : SNA Resource List for NET* ------------------------
Command ===>                                                 Scroll ===> CSR

         S/=View Resource D=Display Resource P=APING CP A=Alerts ?=More Actions
    Resource Name     Type                    Status       MajMode
    NET.FTIC          CDRSC                   ACTIV        CDRSFTIC
    NET.FTICCDRM      CDRM                    ACTIV        CDRMFTIC
    NET.FTIH11        CDRM                    ACTIV        CDRMS
    NET.FTIP39PU      PU_T2.1                 ACTIV--L--   FTIP390
    NET.FTIP390       SW SNA MAJ NODE         ACTIV        FTIP390
    **END**









 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of information provided and actions available on the NCS : SNA Resource List, press F1 (Help).

Displaying APPN Resources by Type

To display APPN resources by type, enter **/SNAAPPN** at a ===> prompt. The NCS : APPN Menu is displayed.

Figure 9-7. NCS : APPN Menu

```
PROD------------------------- NCS : APPN Menu ----------------------/SNAAPPN
Select Option ===>

   RTP - List RTP Pipes                                      APPNRTP
   TRL - List Transport Resource List Entries                APPNTRL
   D   - List Dependant LU Requestors                        APPNDLU
   P   - APING a Control Point                               APING
   AD  - Display APPN Directory Information                  APPNDIR
   AT  - Display APPN Subnetwork Topology Information        APPNTOP
   X   - Exit

Node/CP Name                                  (Required P AD Optional RTP AT )
Resource Type                                                (Optional TRL )
Link Name ...                                                (Optional All )









 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

For details of the options available on the NCS : APPN Menu, press F1 (Help). The following sections describe these options.

Displaying Rapid Transport Protocol (RTP) Pipes

To display a list of RTP pipes, enter **/APPNRTP** at a ===> prompt. The NCS : RTP Pipe List is displayed.

Figure 9-8. NCS : RTP Pipe List

```
PROD------------------------ NCS : RTP Pipe List -----------------------------
Command ===>                                                 Scroll ===> CSR

          S/=View Pipe D=Display Pipe PSW=PathSwitch P=APING CP ?=More Actions
     Pipe                          COS      Connection
     Name     CP Name              Name     State          Sess Queue Con? Sw? TG
     CNR0002C NET.CPPBROB3         CPSVCMG  CONNECTED         1     0 NO   NO  21
     CNR0002D NET.CPPBROB3         CPSVCMG  CONNECTED         1     0 NO   NO  21
     CNR0002E NET.CPPBROB3         RSETUP   CONNECTED         0     0 NO   NO  21
     CNR0002F NET.CPPBROB3         SNASVCMG CONNECTED         1     0 NO   NO  21
     CNR00025 NET.SDD2VTM1         CPSVCMG  CONNECTED         2     1 NO   NO  21
     CNR00030 NET.CPPBROB3         RSETUP   CONNECTED         0     0 NO   NO  21
     CNR00031 NET.CPPBROB3         SNASVCMG CONNECTED         1     0 NO   NO  21
     CNR00032 NET.CPPBROB3         #CONNECT CONNECTED         1     0 NO   NO  21
    **END**




 F1=Help      F2=Split     F3=Exit                  F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap                 F11=Right
```

The NCS : RTP Pipe List displays a list of Rapid Transit Protocol Pipes, which are PU Type 2.1 nodes used by APPN High Performance Routing (HPR). The display has multiple pages, which you can access by scrolling right.

The lines on this panel are color-coded, depending on the values of connection state, congestion, and queue for each pipe. For details, press F1 (Help).

For details of information provided and actions available on the NCS : RTP Pipe List, press F1 (Help).

Displaying Transport Resource List Entries (TRLEs)

To display a list of TRLEs, enter **/APPNTRL** at a ===> prompt. The NCS : Transport Resource List is displayed.

Figure 9-9. NCS : Transport Resource List

```
PROD------------------- NCS : Transport Resource List -------------------------
Command ===>                                                 Scroll ===> CSR

     S/=View TRLE D=Display TRLE SU=View ULP PU SUC=View ULP CP ?=More Actions
   TRL                  MPC    MPC            --Upper Layer Protocol (ULP)--
   Entry    Ctrl Status Level  Usage    HPDT  PU       CP Name           TG
   ISTTD1D2 XCF  ACTIV  HPDT   SHARE    *NA*
   IUTL0000 TCP  ACTIV                   *NA*
   TRLD1    MPC  INACT  HPDT   SHARE    YES
   TRLTT2A4 MPC  ACTIV  HPDT   SHARE    YES   TRLPT2A4 NET.OZSTAFF3      21
   **END**









 F1=Help      F2=Split     F3=Exit                  F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap                 F11=Right
```

The NCS : Transport Resource List displays a list of entries (TRLEs) for the ISRTRL major node. TRLEs define the connectivity characteristics of PUs that provide APPN host-to-host channel connection. The display has multiple pages, which you can access by scrolling right.

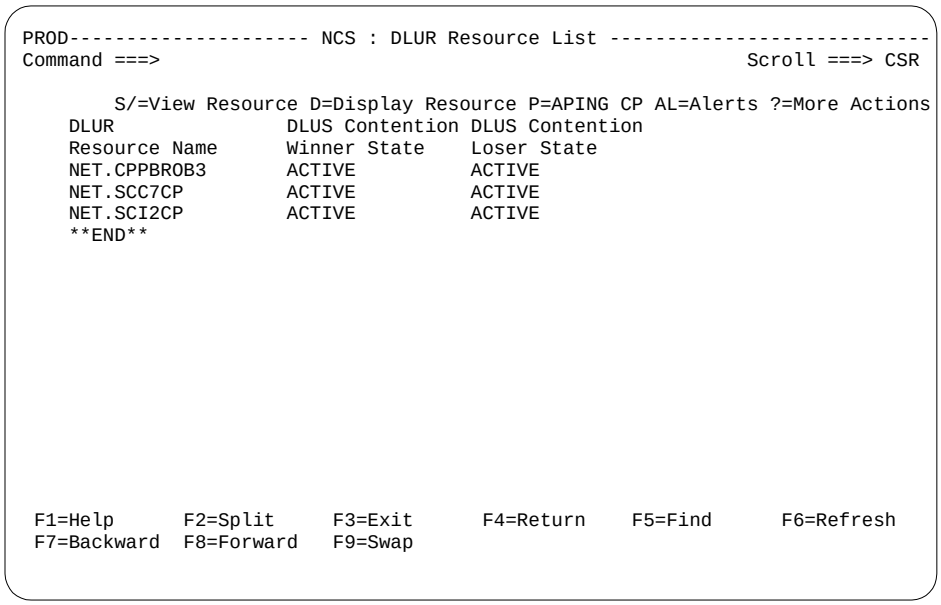
For details of information provided and actions available on the NCS : Transport Resource List, press F1 (Help).

Displaying Dependent LU Requestor (DLUR) Resources

To display a list of DLUR resources, enter **/APPNDLU** at a ===> prompt. The NCS : DLUR Resource List is displayed.

This panel displays a list of dependent LU requestors for which this host acts as dependent LU server (DLUS). The DLUS sends data on a contention-winner session and receives data on a contention-loser session. This panel displays information on the current state of both these sessions for each DLUR.

Figure 9-10. NCS : DLUR Resource List



For details of information provided and actions available on the NCS : DLUR Resource List, press F1 (Help).

Using the APING Function

The SNA APING function tests the route to another SNA node and obtains performance information for the route.

Note

For this to happen, the SNA node must support the APING transaction.

To perform an APING on a node, do this:

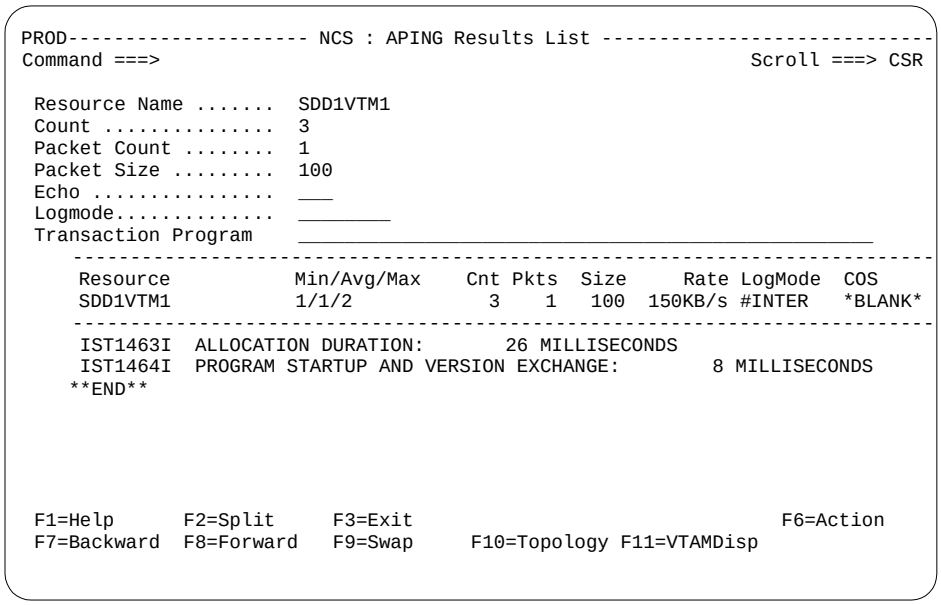
Step 1. Type **P** at the ===> prompt on the NCS : APPN Menu (/SNAAPPN).

Step 2. Type a resource name in the Node/CP Name field and press ENTER. The NCS : APING Results List panel (/APING) is displayed.

Note

You can also perform an APING on a node by typing P beside the resource name on any NCS panel that shows APING as an available action.

Figure 9-11. NCS : APING Results List



The APING Results List panel contains three sections:

- Parameters (top)

  You can change these parameters to perform a fresh APING for a node.

- Results (middle)

  The results area contains a series of lines, each showing the result of one APING operation. The latest result is shown at the top of the list.

- Messages (bottom)

  This is a selection of messages relating to the latest APING operation.

Note

The results and messages lines together form a scrollable list.

To perform further APING actions, you can change any of the input parameters on this panel and press F6 (Action).

For further information about the NCS : APING Results List panel, press F1 (Help).

Displaying APPN Directory Information

The NCS : APPN Directory Entry panel displays information from the directory database about a particular resource and also about the resources that it serves and owns. For example, you can display a network node along with the end nodes that it serves and the LUs that it owns.

To display APPN directory information for a node, do the following:

Step 1. Type **AD** at the ===> prompt on the NCS : APPN Menu (/SNAAPPN).

Step 2. Type a resource name in the Node/CP Name field and press ENTER. The NCS : APPN Directory Entry Display panel is presented.

Note

You can also display directory entry information for a node by typing S beside its resource name on NCS : Resource Selection panel and pressing ENTER.

Figure 9-12. NCS : APPN Directory Entry Display

```
PROD----------------- NCS : APPN Directory Entry Display ----------------------
Command ===>                                                 Scroll ===> CSR


  Directory Information for *.SDD1VTM1

  Network Name      Entry Type          Control Point       Network Node Server
  NET.SDD1VTM1      REGISTERED NN       NET.SDD1VTM1        ***NA***
****************************** BOTTOM OF DATA *********************************









 F1=Help      F2=Split     F3=Exit      F4=NetSrch   F5=Find
 F7=Backward  F8=Forward   F9=Swap                 F11=VTAMDisp
```

For details of the information provided on the NCS : APPN Directory Entry Display panel, press F1 (Help).

Displaying NCS Subnetwork Topology Information

The NCS : Subnetwork Topology panel provides information about the currently selected node (the origin control point) and any operative or quiescent adjacent destination control points.

To access this information, do this:

Step 1. Type /**APPNTOP** at a ===> prompt.

Step 2. Optionally, type a resource name in the node name field. The default is the SSCP name of the current system.

Step 3. Press ENTER. The NCS : Subnetwork Topology panel is displayed. The first line of the selection list on this panel shows the current node and following lines list its adjacent nodes.

Figure 9-13. NCS : Subnetwork Topology Display

```
PROD------------ NCS : Subnetwork Topology for NET.SDD1VTM1 -------------------
Command ===>                                                  Scroll ===> CSR

              S/=Select T=Topology AT=Adj Node Topology TG=TG P=APING AL=Alerts
    Adjacent Node      Type  Status  TGN  TG Type     CP-CP
    NET.SDD1VTM1       NN    -       -    -           -
    NET.CPPBROB3       EN    OPER    21   ENDPT       YES
    NET.SCC7CP         EN    OPER    21   ENDPT       YES
    NET.SCC701         EN    OPER    21   ENDPT       NO
    NET.SCC702         EN    OPER    21   ENDPT       NO
    NET.SCI2CP         NN    OPER    21   INTERM      YES
    NET.SDD2VTM1       NN    OPER    3    INTERM      YES
    NET.SDD2VTM1       NN    OPER    21   INTERM      YES
    NET.SDD2VTM1       NN    OPER    22   INTERM      YES
    P390B.P390SSCB     NN    OPER    3    INTERCLUST  YES
    **END**




 F1=Help      F2=Split     F3=Exit                  F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

The NCS : Subnetwork Topology display shows the currently selected node (the origin control point) and any operative or quiescent adjacent destination control points. The display forms a scrollable selection list where the first item in the list is the current node and all subsequent lines are adjacent nodes.

Note

The information displayed can vary, depending on the VTAM level of your system, and on the types of resources available in your network.

For details of the information provided and actions available on the NCS : Subnetwork Topology panel, press F1 (Help).

You can select any node to display node attributes. You can select an adjacent node to display transmission group attributes or to display its adjacent nodes.

Displaying Topology Attributes for Any Node

The APPN : Node Topology Attributes panel displays information about the topology of an APPN network for a network node or an interchange node.

To access this display, enter **T** beside the required node on the NCS : Subnetwork Topology panel.

Figure 9-14. NCS : APPN Node Topology Attributes

```
PROD----------------- NCS : APPN Node Topology Attributes ------Columns 001 074
Command ===>                                                    Scroll ===> CSR


  Information for X390.USS3270

  Node Type ................. Network Node
  Route Resistance .......... 128
  Congestion ................ NONE
  CP-CP Sessions? ........... YES
  ICN/MDH? .................. NO
  Central Directory Server? . NO
  Resource Sequence Number .. 0
  High Performance Routing .. NONE
  Border Node? .............. NO
  Native .................... NO
  Time Left ................. 10
****************************** BOTTOM OF DATA ******************************




 F1=Help      F2=Split     F3=Exit                  F5=Find
 F7=Backward  F8=Forward   F9=Swap                F11=VTAMDisp
```

For details of the information provided on the NCS : APPN Node Topology Attributes panel, press F1 (Help).

Displaying Topology Attributes for a Transmission Group

The APPN : Transmission Group Topology display provides topology attributes for the transmission group associated with the selected node.

To access this display, enter **TG** beside the required node on the NCS : Subnetwork Topology panel.

Figure 9-15. NCS : APPN Transmission Group Topology

```
PROD--------------- NCS : APPN Transmission Group Topology -----Columns 001 074
Command ===>                                                   Scroll ===> CSR


  Origin Node ............... NET.XYZ1VTM1
  Destination Node .......... X390.USS3270
  Transmission Group Number . 21

  Transmission Group Attributes

  Status .................... OPER
  Transmission Group Type ... INTERCLUST
  CP-CP Sessions? ........... YES
  Resource Sequence Number .. 76
  High Performance Routing .. NO
  Capacity .................. 8K
  Propagation Delay.......... TERRESTR (0.48 to 49.152 milliseconds)
  Cost/time ................. 0
  Cost/byte ................. 0
  Security .................. UNSECURE (Not secure)
  User parameter (1) ........ 128
  User parameter (2) ........ 128
 F1=Help      F2=Split     F3=Exit                  F5=Find
 F7=Backward  F8=Forward   F9=Swap                 F11=VTAMDisp
```

For details of the information provided on the NCS : Transmission Group Topology panel, press F1 (Help).

Displaying Adjacent Nodes for a Network Node

The NCS : Subnetwork Topology display, shown in Figure 9-13, provides information about the adjacent nodes for the selected network node. For a description of this display, see *Displaying NCS Subnetwork Topology Information*, on page 9-15.

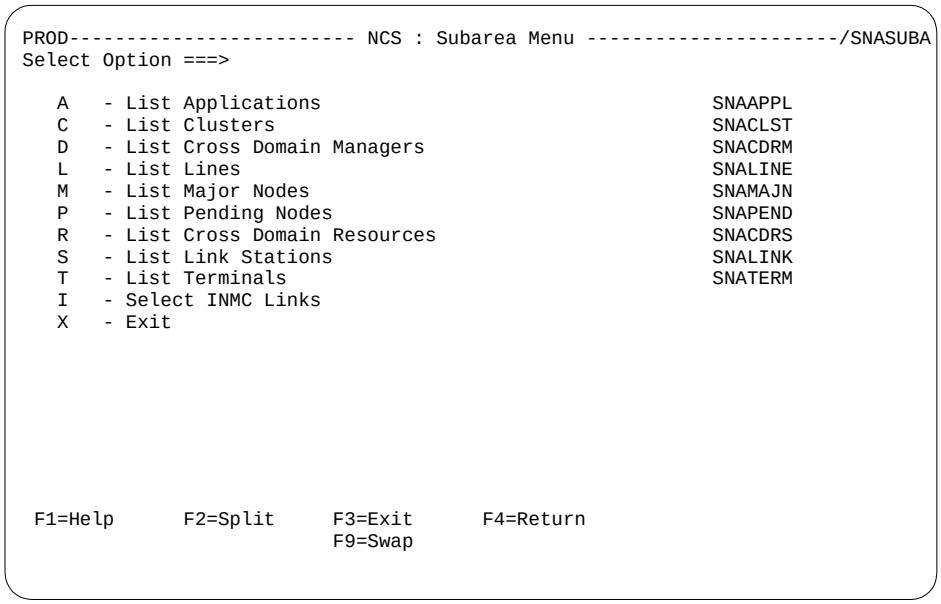
To access this display, enter **AT** beside the required node on the NCS : Subnetwork Topology panel. A panel (see Figure 9-13) showing the view of adjacent nodes from the currently selected node is displayed.

For details of the information provided on the NCS : Subnetwork Topology display, press F1 (Help).

Displaying Subarea Resources

To access subarea support resources, enter **/SNASUBA** at a ===> prompt. The NCS : Subarea Menu is displayed.

Figure 9-16. NCS : Subarea Menu



For details of the options available on the NCS : Subarea Menu, press F1 (Help). The following sections describe these options.

Selecting the Domains You Want to Monitor

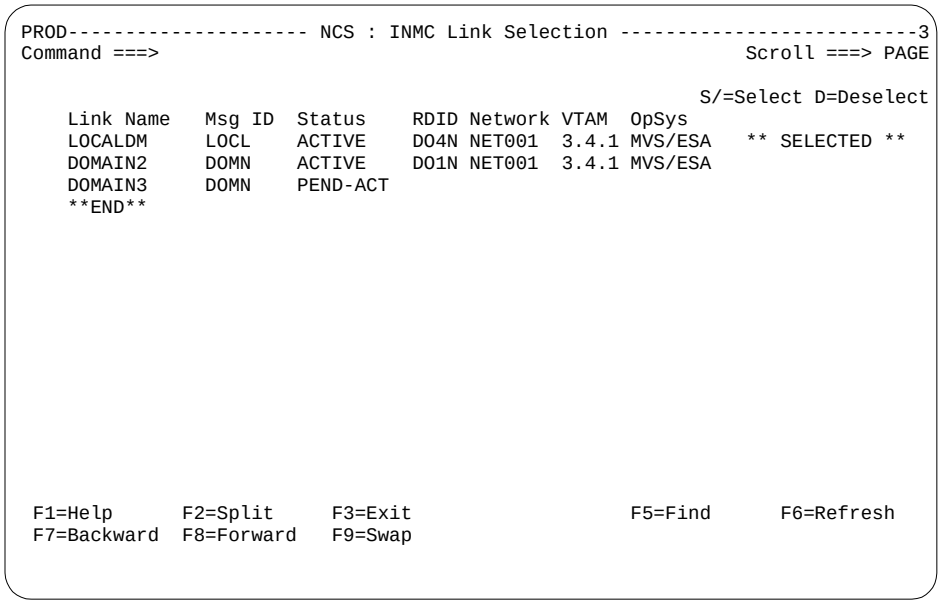
NCS monitors the nodes in the domain in which it is running, or any domain connected via an INMC link.

To select which domains will be included on the summary displays, do the following:

Step 1. Enter **I** at the ===> prompt on the NCS : Subarea Menu.

The NCS : INMC Link Selection panel is displayed, showing the current domain in which NCS is running and any links to other domains.

Figure 9-17. NCS : INMC Link Selection



Step 2. Select the domains that contain the nodes you want to appear on the summary displays by typing **S** next to the required domains and pressing ENTER.

`** SELECTED **` is displayed next to the domains that you have selected.

Step 3. Press F3 (Exit) to return to the NCS : Subarea Menu

Note

If you are monitoring resources in multiple domains, then your user ID must be defined on the NetMaster for SNA system for those domains.

Deselecting a Domain

If you do not want a selected domain's resources to appear in a summary display, type **D** next to a selected domain on the NCS : INMC Link Selection panel, and press ENTER—the `**SELECTED**` tag is no longer visible.

Note

At least one domain must be selected. The local domain is always displayed at the head of the list, with the other domains in link-name order.

Displaying Nodes in a Summary Display

You can list applications, clusters, cross domain managers, lines, major nodes, pending nodes, cross domain resources, link stations, or terminals from the NCS : Subarea Menu. When you select one of these types of nodes, NCS presents a summary list for that type of resource.

Using the Summary List

A summary list that provides information about the nodes of the selected type. To access a summary display, select one of the following options from the NCS : Subarea Menu (/SNASUBA):

- A—List Applications (/SNAAPPL)
- C—List Clusters (/SNACLST)
- D—List Cross Domain Managers (/SNACDRM)
- M—List Major Nodes (/SNAMAJN)
- P—List Pending Nodes (/SNAPEND)
- L—List Lines (/SNALINE)
- R—List Cross Domain Resources (/SNACDRS)
- S—List Link Stations (/SNALINK)
- T—List Terminals (/SNATERM)

Figure 9-18 illustrates a summary list for applications (/SNAAPPL).

Figure 9-18. NCS : SNA Summary List - APPLS

```
PROD------------------ NCS : SNA Summary List - APPLS -------------------------
Command ===>                                                  Scroll ===> CSR

                          S/=View Resource D=Display Resource ?=More Actions
    Resource   Active  In-sess Pend/Err Inactive Rlsd/Nac    Total  Link Name
    APPCOSA         0        1        0        0        0        1  *Local*
    APPLOMVS        1        0        0        0        0        1  *Local*
    APPLXCD1        1        1        0        0        0        2  *Local*
    APPLXCQ1        2        0        0        0        0        2  *Local*
    APSCMNM1       28        0        0        0        0       28  *Local*
    APSCSNM1      108        6        0        0        0      114  *Local*
    APSDDNM1        9        0        0        0        0        9  *Local*
    APSDENM1       52        6        0        0        0       58  *Local*
    APSQANM1      128        0        0        0        0      128  *Local*
    APSSANM1       56        0        0        0        0       56  *Local*
    AP0JUNK         3        0        0        0        0        3  *Local*
    CDAPPID1       29        0        0        0        0       29  *Local*
    CMBXAPP         9        0        0        0        0        9  *Local*
    IMSAPLI         1        0        0        0        0        1  *Local*
    IMSAPLR         2        0        0        0        0        2  *Local*
    NSYD1          36        0        0        0        0       36  *Local*
    OMXCAPPL        1        0        0        0        0        1  *Local*
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed on the NCS : SNA Summary List, press F1 (Help).

Displaying Major Nodes

To display the status of all the major nodes, enter **/SNAMAJN** at a ===> prompt. Figure 9-19 is an example of a major node list.

Figure 9-19. NCS : SNA Major Node List

```
PROD---------------------- NCS : SNA Major Node List ---------------------------
Command ===>                                                  Scroll ===> CSR

                            S/=View Resource D=Display Resource ?=More Actions
    Resource Name     Type                      Status              Link Name
    NET.APPCOSA       APPL SEGMENT              ACTIV               *Local*
    NET.APPLATT       CDRSC SEGMENT             ACTIV               *Local*
    NET.APPLCAS       CDRSC SEGMENT             ACTIV               *Local*
    NET.APPLCRM       CDRSC SEGMENT             ACTIV               *Local*
    NET.APPLOMVS      APPL SEGMENT              ACTIV               *Local*
    NET.APPLXCD1      APPL SEGMENT              ACTIV               *Local*
    NET.APPLXCQ1      APPL SEGMENT              ACTIV               *Local*
    NET.APSCMNM1      APPL SEGMENT              ACTIV               *Local*
    NET.APSCSNM1      APPL SEGMENT              ACTIV               *Local*
    NET.APSDDNM1      APPL SEGMENT              ACTIV               *Local*
    NET.APSDENM1      APPL SEGMENT              ACTIV               *Local*
    NET.APSQANM1      APPL SEGMENT              ACTIV               *Local*
    NET.APSSANM1      APPL SEGMENT              ACTIV               *Local*
    NET.AP0JUNK       APPL SEGMENT              ACTIV               *Local*
    NET.CANCP16       CA MAJOR NODE             ACTIV               *Local*
    NET.CDAPPID1      APPL SEGMENT              ACTIV               *Local*
    NET.CDRMFTIC      CDRM SEGMENT              ACTIV               *Local*
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

The major node list displays the types of major nodes. Possible values are:

- Application
- CDRM
- CDRSC
- Local SNA
- Local non-SNA
- NCP
- Switched
- Channel attached

For details of the information provided on the NCS : SNA Major Node List, press F1 (Help).

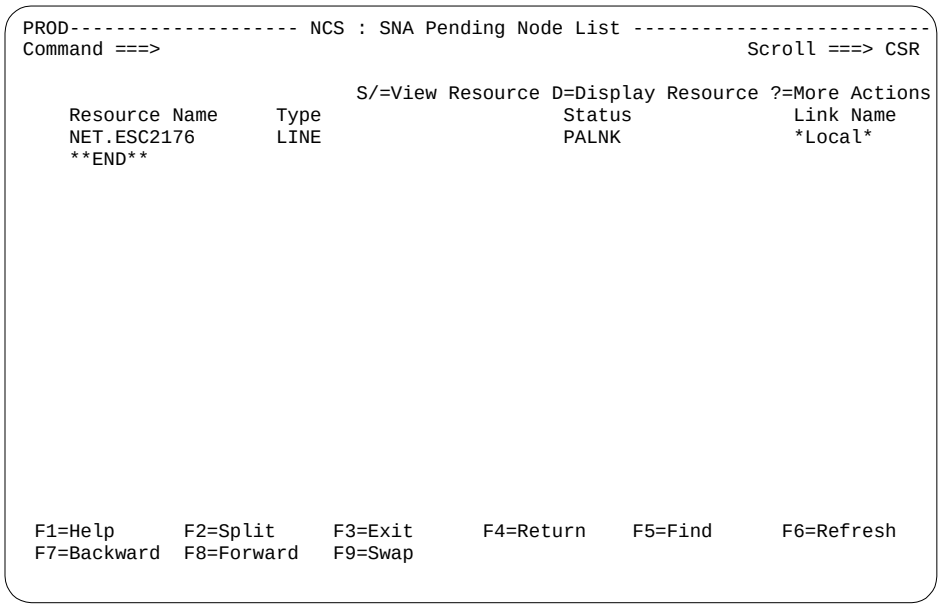
Displaying Pending Nodes

To display all nodes in a pending state, enter **/SNAPEND** at a ===> prompt. The NCS : SNA Pending Node List is displayed.

Note

Pending node lists are not available on Fujitsu MSP operating systems with VTAM-G.

Figure 9-20. NCS : SNA Pending Node List



For details of the information provided on the NCS : SNA Pending Node List, press F1 (Help).

Display Options

Display options are used to display information about nodes. The actions listed below can be entered:

- Beside any box in a graphical display (indicated by =>)
- Beside any subordinate nodes listed in a graphical display

You can use the actions in Table 9-1 to display all node types.

Table 9-1. Display Options for all Node Types

Action	Result
S	Displays the selected node and a list of its subordinate nodes.
SA	Displays the selected node and a list of its active subordinate nodes.
SI	Displays the selected node and a list of its inactive subordinate nodes.
SN	Displays the selected node only, without subordinate nodes.

The actions in Table 9-2 are the options for displaying clusters.

Table 9-2. Display Options for Clusters

Action	Result
SC	Displays the selected node and a list of its subordinate clusters.
SAC	Displays the selected node and a list of its active subordinate clusters.
SIC	Displays the selected node and a list of its inactive subordinate clusters.

The actions in Table 9-3 are the options for displaying lines.

Table 9-3. Display Options for Lines

Action	Result
SL	Displays the selected node and a list of its subordinate lines.
SAL	Displays the selected node and a list of its active subordinate lines.
SIL	Displays the selected node and a list of its inactive subordinate lines.

The actions in Table 9-4 are the options for displaying link stations.

Table 9-4. Display Options for Link Stations

Action	Result
SS	Displays the selected node and a list of its subordinate link stations.
SAS	Displays the selected node and a list of its active subordinate link stations.
SIS	Displays the selected node and a list of its inactive subordinate link stations.

The actions in Table 9-5 are the options for displaying terminals.

Table 9-5. Display Options for Terminals

Action	Result
ST	Displays the selected node and a list of its subordinate terminals.
SAT	Displays the selected node and a list of its active subordinate terminals.
SIT	Displays the selected node and a list of its inactive subordinate terminals.

Displaying a Cross-Domain Resource

To display a cross-domain resource (CDRSC) in the domain it is defined in, type **X** in the Command field on any summary, major node, or pending node display, or against any node in a graphical display. Then press ENTER.

Note

This command applies to nodes of type CDRSC only.

Displaying SNA Status Codes

To display SNA status codes for a node, enter **Q** against any nodes where a status is displayed.

Note

This option is not available from summary displays.

Displaying Configuration Details

To display configuration details, enter **C** against any node.

Note

Configuration details are not displayed unless you defined them at installation.

VTAM Commands

You can also use actions that result in VTAM commands to display nodes. These are entered as actions in the same places as the display options described in the previous section.

The actions in Table 9-6 are the list of valid Management Services actions and the VTAM commands generated for displaying nodes.

Table 9-6. VTAM Command Display Actions

Action	VTAM Command Generated	Result
D	D NET,ID=*nodename*,E	Displays the node and the name and status of all its subordinate nodes.
DA	D NET,ID=*nodename*,A	Displays the node and the name and status of all its active subordinate nodes.
DEN	D NET,ID=*nodename*,EN	Displays the node in a Fujitsu VTAM-G environment.
DES	D NET,ID=*nodename*,ES	Displays the node set in a Fujitsu VTAM-G environment.
DI	D NET,ID=*nodename*,I	Displays the node and the name and status of all its inactive subordinate nodes
DN	D NET,ID=*nodename*	Displays the node only. Does not display any subordinate nodes.

Note

The DEN and DES actions are valid only in a Fujitsu VTAM-G environment.

Finding Out More About the Displayed Nodes

To find out additional information about the nodes you have displayed, you can enter actions. These actions allow you to display the following information:

- Alerts for a selected node
- NEWS events for a selected node
- NTS active session data
- Sessions for a sub-resource
- A VTAM display of the link station

These are discussed in the following sections.

Displaying Alerts

To display alerts, enter **AL** against any node. The Alert Monitor : Alerts panel is displayed, listing any alerts for the selected resource.

Displaying NEWS Events

To display NEWS events for a node, enter **N** against any node.

Note

You can access NEWS events for a node only if you have NEWS access privilege.

Displaying NTS Active Session Data

To display NTS active session data, use the actions in Figure 9-6.

Table 9-7. Actions to Display NTS Active Session Data

Action	Result
LP	Searches for the node as the primary session partner.
LS	Searches for the node as the secondary session partner.
L	Searches for the node as the secondary session partner first, and, if there are no sessions, as the primary partner.

Note

You can access NTS active session data for a node only if you have NTS access privilege.

Displaying Sessions for a Sub-resource

To display sessions for a sub-resource, enter **DS** against any node.

Note

You can display sessions for a sub-resource only if a session ID is provided by VTAM.

Displaying a Link Station for a Sub-resource

To view a VTAM display of a link station, enter **DLS** against any node.

Note

You can view a VTAM display of a link station only if a link station is provided by VTAM.

Controlling Nodes

Controlling nodes involves activating or deactivating a resource, or changing its status.

To control a node, enter actions against any node.

Table 9-8 contains the valid actions and the VTAM commands generated that are used to control nodes:

Table 9-8. VTAM Command Control Options

Action	VTAM Command Generated	Result
A	V NET,ACT,ID=*nodename*	Activates a node name.
I	V NET,INACT,ID=*nodename*	Deactivates a node name.
II	V NET,INACT,ID=*nodename*,I	Deactivates a node name immediately when sessions have formally ended.
IF	V NET,INACTID=*nodename*,F	Forces a node name to be deactivated.
V	V NET,ID=*nodename*	Varies a node name as entered by the user.
F	F NET,ID=*nodename*	Modifies a node name.

When these actions are entered, they are displayed in the Command Entry input field so they can be modified before being executed.

10

Displaying and Controlling LAN Resources

This chapter describes how to use the LAN manager facility of NetMaster for SNA to display and control your LAN resources.

This chapter discusses the following topic:

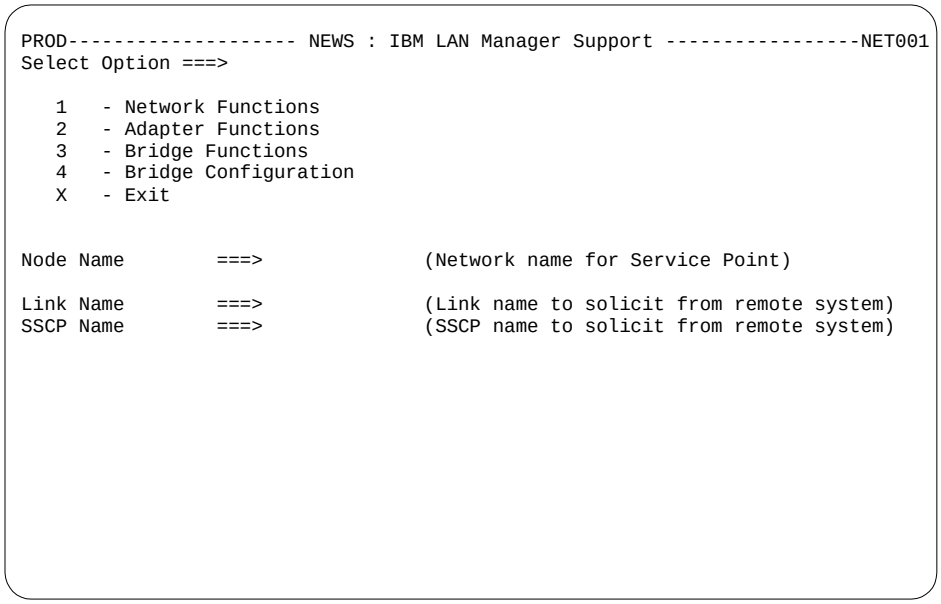
- IBM LAN Manager Support

IBM LAN Manager Support

The LAN manager support facility provides access to product-specific functions for the supported non-SNA network management products. These functions include displaying the status of a ring, displaying the status of an adapter, and controlling the configuration of a bridge.

To access the LAN manager support facility, enter **/LAN** at a ===> prompt. The NEWS : IBM LAN Manager Support menu is displayed.

Figure 10-1. NEWS : IBM LAN Manager Support Menu



The options available from this menu are described in the following sections.

The following input fields are also provided on the NEWS : LAN Manager Support menu:

Node Name
The network name for the service point.

Link Name or **SSCP Name**
One of these can be specified to route the request to a remote host.

If both these fields are omitted, the request is sent to the local host.

Displaying Network Information

IBM LAN Manager allows you to view and control the network as a whole by using the network functions option. You can display the status of the LAN, reset the LAN, and test segments and paths on the LAN.

To access network functions, enter **1** at the ===> prompt on the NEWS : IBM LAN Manager Support menu (/LAN). The NEWS : IBM LAN Manager Network Functions menu is displayed.

Figure 10-2. News : IBM LAN Manager Network Functions Menu

```
PROD---------------- NEWS : IBM LAN Manager Network Functions -----------NET001
Select Option ===>

   1   - Network Status
   2   - Reset the LAN Manager
   3   - Test a Segment
   4   - Test a Path
   X   - Exit

Node Name        ===>                  (Network name for Service Point)

Segment Number   ===>                  (Ring or Bus segment number - Option 3)

Source Adapter Name   ===>                           |(Option 4)
       or      Number ===>                           |(Option 4)

Target Adapter Name   ===>                           |(Option 4)
       or      Number ===>                           |(Option 4)

Routing Info     ===>                                 (Option 4)


Link Name        ===>              (Link name to solicit from remote system)
SSCP Name        ===>              (SSCP name to solicit from remote system)
```

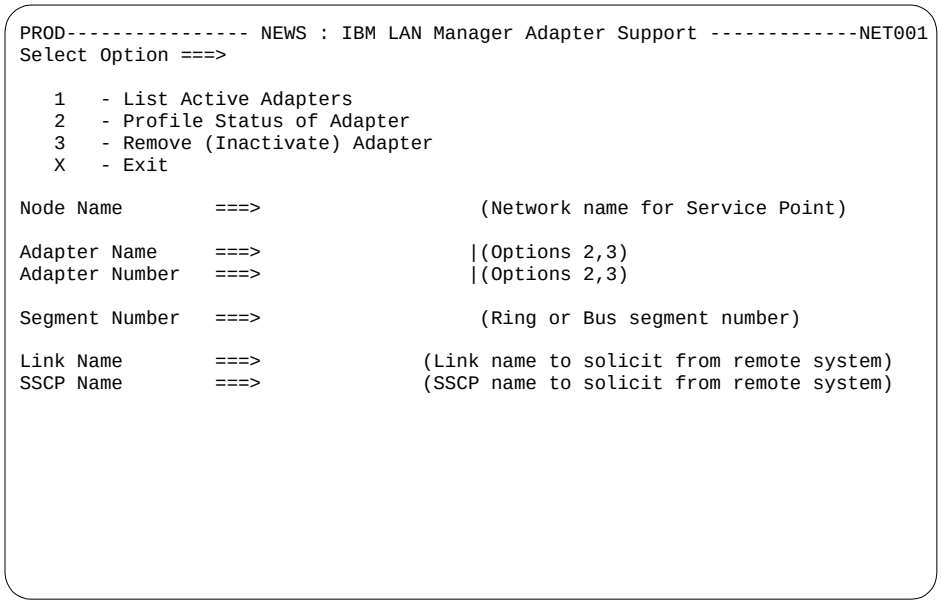
For details of the options and input fields available on this panel, press F1 (Help).

Displaying Adapter Information

IBM LAN Manager also allows you to display and control the adapters that connect the different parts of your network. Through the adapter functions option, you can list the adapters in your network, obtain their status, and remove any inactive adapters.

To access adapter functions, enter **2** at the ===> prompt on the NEWS : IBM LAN Manager Support menu (/LAN). The NEWS : IBM LAN Manager Adapter Support menu is displayed.

Figure 10-3. News : IBM LAN Manager Adapter Support Menu



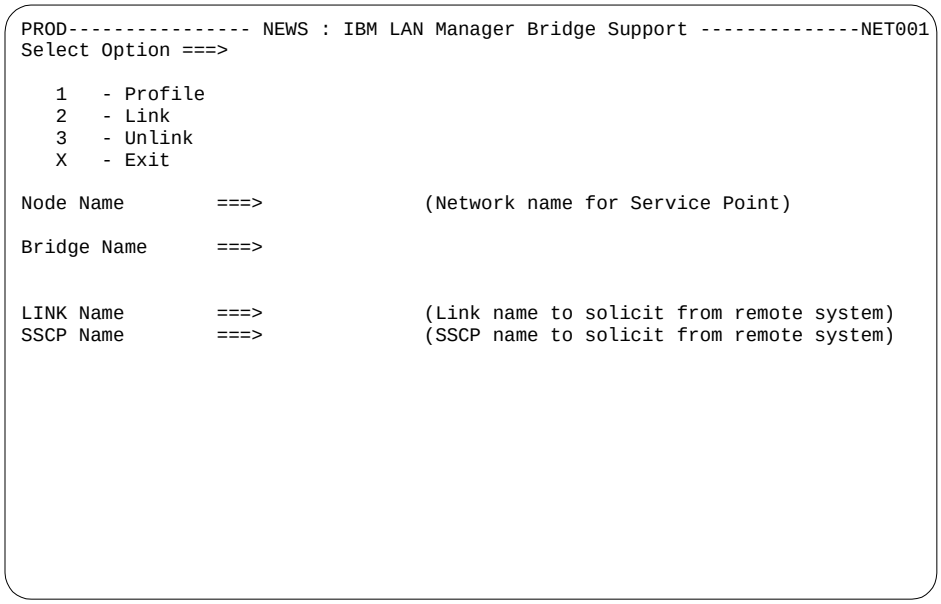
For details of the options and input fields available on this panel, press F1 (Help).

Displaying Bridge Information

If you have multiple LANs connected by bridges, IBM LAN Manager allows you to display and control those bridges. The bridge functions option allows you to display the configuration of the bridge, and to connect or disconnect the bridge.

To access bridge functions, enter **3** at the ===> prompt on the NEWS : IBM LAN Manager Support menu (/LAN). The NEWS : IBM LAN Manager Bridge Support menu is displayed.

Figure 10-4. News : IBM LAN Manager Bridge Support Menu



For details of the options and input fields available on this panel, press F1 (Help).

Changing Bridge Configuration

IBM LAN Manager also allows you to control configuration of the bridges in your network.

To access the bridge configuration menu, enter **4** at the Select Option ===> prompt on the NEWS : IBM LAN Manager Support menu (/LAN). The NEWS : IBM LAN Manager Alter Bridge Configuration menu is displayed.

Figure 10-5. News : IBM LAN Manager Alter Bridge Configuration Menu

```
PROD---------- NEWS : IBM LAN Manager Alter Bridge Configuration -------NET001
Select Option ===>

   1   - Change Bridge or LAN Segment Number
   2   - Set Performance Thresholds
   3   - Set Single-Route Broadcast Options
   4   - Set Link Password
   X   - Exit

Node Name        ===>              (Network name for Service Point)

Bridge Name      ===>


Link Name        ===>              (Link name to solicit from remote system)
SSCP Name        ===>              (SSCP name to solicit from remote system)
```

For details of the options and input fields available on this panel, press F1 (Help).

11

Managing and Soliciting Information from Network Devices

This chapter describes how to get information from devices to assist with monitoring network errors.

This chapter discusses the following topics:

- About Device Support
- Getting Information from Generic Devices
- Getting Information from Specific Devices

About Device Support

Device support allows you to solicit information from a device within your network to assist in determining the cause of a network error. Device support can also be used to test or reconfigure devices.

Device support performs the following functions:

- Sends a CNM request to a specified network device
- Examines the reply
- Presents a formatted display of the data returned

Accessing Device Support

To access device support, enter **/DEVSUPP** at a ===> prompt. The SNA : Device Support Diagnosis Menu is displayed.

Figure 11-1. SNA : Device Support Diagnosis Menu

```
PROD---------------- SNA : Device Support Diagnosis Menu -------------/DEVSUPP
Select Option ===>

   G   - Generic Device Support                              -
   R   - RTM - (3x74)                                        -
   CS  - CSCF - Central Site Control Facility                DEVCSCF
   LPD - LPDA-2                                              DEVLPDA
   SP  - Service Point                                       -
   PS  - Product Set ID                                      -
   X   - Exit









 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

From the SNA : Device Support Diagnosis Menu, you can obtain information on both generic and specific devices.

Note

The devices that are displayed on the device support menu depend on the settings in the Network Services Control File (also known as the NSCNTL database). This file is maintained by your system administrator. For more information on settings in the network control services file, see the *Unicenter NetMaster Network Management for SNA Implementation and Administration Guide.*

Getting Information from Generic Devices

To get information from generic devices, enter **G** at the ===> prompt on the SNA : Device Support Diagnosis Menu (/DEVSUPP). The NEWS : Generic Device Support menu is displayed. This menu allows you to enter options and field input to solicit information from most devices.

Figure 11-2. NEWS : Generic Device Support Menu

```
PROD-------------------- NEWS : Generic Device Support ----------------NET001
Select Option ===>

   1   - Link Test Statistics
   2   - Summary Error Data
   3   - Communication Adapter Error Statistics
   4   - EC Level Information
   5   - All of the Above
   6   - 386X Link Status Test
   7   - 386X DTE Test
   X   - Exit

Node Name        ===>
NCP Name         ===>          (Options 6,7)

Reset Counters?  ===> N (Enter Y to reset counters in controller)

Results          ===> D ( B : both displayed & recorded on the database,
                          D : displayed, not recorded on the database,
                          R : recorded on the database, not displayed)

Link Name        ===>              (Link name to solicit from remote system)
SSCP Name        ===>              (SSCP name to solicit from remote system)
```

Input fields are provided on the generic device support menu to allow you to target the device more specifically, and to specify how the information is presented. For details of these fields, press F1 (Help).

Getting Error and Statistical Information

Most SNA controllers remember error and statistical information as indicated in the categories shown on the menu:

- Link test statistics—counts associated with the processing of Link-Level-2 (LL2) tests
- Summary error data—counts which detail various hardware and communications problems
- Communication adapter error statistics—counts which detail the number and types of errors associated with a PU's communication adapter
- EC level information—information about a PU's engineering change level, such as its microcode level or installed patches and RPQs.

Note

If the PU to be solicited is a 3174 or equivalent, then use option 4 twice to receive all EC and RPQ information.

Selecting option 5 allows you to solicit all the information described in options 1 to 4. Press F3 to scroll through the panels.

For installations using IBM 386X modems, you can solicit the following information using options 6 and 7:

- 386X link status test—issues a request for 386X modem equipment to perform a link status test to provide its view of line quality
- 386X DTE test—requests 386X modems to report on the remote DTE interface

Getting Information from Specific Devices

You can also solicit information about specific devices. The supported devices available make up the rest of the options on the SNA : Device Support Diagnosis Menu (/DEVSUPP). The devices displayed are dependent on which devices are supported by your installation. These options can be used to solicit information about that device type.

Supported Devices

The supported devices are as follows:

- RTM - (3x74)—used to review, solicit, or change RTM status of 3174 and 3274 cluster controllers or equivalents
- CSCF - (Central Site Control Facility)—used to invoke online tests against remote controllers. These tests allow a user to IML, configure and display, or update data.
- LPDA-2—used for Link Problem Determination Aid 2. This is available with the 586*x* and 586*x* compatible, and 5822 and 5822 compatible type devices.
- Service Point Support—used to send commands to OEM devices via a service point
- Product Set ID Support—used to solicit product set ID information. This information provides a description of the hardware and software present in the device.
- FCS - (3600/4700)—used to solicit status, error, and RTM data or change the alert generation intervals for finance communication system devices
- GATEWAY - (3703)—used to solicit various information from 3703 SNA GATE devices owned by this VTAM and to reset 3703 SNA GATE counter values
- SNA_HUB - (3723 Downstream devices)—used to solicit and display link test statistics, summary error data, CA error statistics, EC level information or validate a CNM path from a SNA_HUB device
- 3710—used to solicit configuration data, change the line status, password, or thresholds, or run diagnostics for a 3710 network controller device

Each option has its own panel. These panels allow you to enter options and field input to solicit information from the chosen device. For more information, access the online help panels for each device, accessible by pressing F1.

12

Keeping Track of Your Network

This chapter describes how to keep track of your network by using the Network Tracking System (NTS).

This chapter discusses the following topics:

- About NTS
- Features of NTS
- How NTS Provides Information
- Accessing NTS

About NTS

NTS is an integrated network management and problem determination system that operates in multi-domain networks. It accumulates traffic statistics on a session and resource basis to allow network performance monitoring. It uses the data available to build a model of the network environment in which is executing. This model reflects the relationship between SNA resources, sessions, and routes.

Features of NTS

NTS provides the following features for network navigation, problem determination, and problem analysis:

- Selection lists of resources, subareas, sessions, and routes, both active and logged in the database
- Display of accounting, error, trace, response time, and configuration data
- Graphical displays of resource statistics, route configuration, and session configuration
- Dynamic route testing
- Control of session tracing
- Presentation of MAI sessions as end user to application sessions
- Centralized monitoring of all network activity in multiple domains through the use of NTS-SI

How NTS Provides Information

NTS provides information through the collection of the following types of data:

- Session Awareness (SAW) data—information about session starts, session ends, session failures, and bind failures. SAW data is also used by NTS to build the network model to allow the display and monitoring of system activity.
- Session Trace data—information about the protocols, and data sent and received on a session; used to assist with problem determination
- Response Time Monitor (RTM) data—information about how long it takes for an operation to be transmitted between two resources connected in a session; used to assist with performance analysis
- Route Configuration data—information about the source, destination, status, adjacent subarea numbers, and transmission priority of explicit and virtual routes; used to assist with problem determination
- NetSpy data—SNA RTM information collected by NetSpy agents; available if the NetMaster-to-NetSpy (NTN) interface is currently active in your product region.

Accessing NTS

To access NTS, enter **/SNASESS** at a ===> prompt. The NTS : Primary Menu is displayed.

Figure 12-1. NTS : Primary Menu

```
PROD------------------------- NTS : Primary Menu ----------------------NET001
Select Option ===>

   1   - List Resources                                        Userid   USER01
   2   - List Primary Sessions                                 LU     NMMAF055
   3   - List Secondary Sessions                               Time   09.53.08
   4   - List Subareas, Subordinate Resources                  TUE 09-OCT-2001
   5   - List Virtual Routes
   6   - List Explicit Routes
   7   - Route Test Menu
   8   - Resource Statistics
   C   - Control Functions
   X   - Exit
                                                               ( Options     )
Resource Name   ===>           Name or Name* to restrict list  ( 1 2 3 4     )
Resource Netid  ===> NET001    Netid to restrict list          ( 1 2 3       )
Session Partner ===>           Name or Name* to restrict list  (   2 3       )
Partner Netid   ===>           Netid to restrict list          (   2 3       )
Scope           ===> A         H History, A Active, blank All  ( 1 2 3       )
Resource Type   ===>           Valid types: LU SLU PLU PU SSCP ( 1           )
Session Type    ===>           Valid types: LL SL SP SS MAI CC (   2 3       )
Session User ID ===>           User ID for MAI sessions only   (   2 3       )
Session Data    ===>           A Acc, E Err, R RTM, T Trace    (   2 3       )
Reference Netid ===> NET001    Reference Network Identifier    ( 1 2 3 4 5 6 )
```

Input fields are provided to allow you to restrict the information displayed on selection lists. For details of the options and input fields available, press F1 (Help).

The options on the NTS : Primary Menu are described in the following chapters:

Options 1 to 6	Chapter 14, *Displaying and Monitoring Network Activity*
Option 7, 8, and C	Chapter 15, *Analyzing Performance and Determining Problems*

Part IV

Diagnosing Network Problems

13

Investigating Network Errors and Trends

This chapter describes how to use the database review menu to display CNM records. Reviewing these records allows you to investigate network errors and trends.

This chapter discusses the following topics:

- About the Database Review Menu
- Displaying Device Information
- Displaying Events
- Displaying Attentions
- Displaying Statistics
- Displaying Response Time Monitor (RTM) Data

About the Database Review Menu

The database review menu allows you to display details of all CNM records that have been logged to the NEWS database. For example, if you specified either B or R in the Results field of a NEWS : Generic Device Support menu option, records are logged to the NEWS database.

Accessing the Database Review Menu

To access the database review menu, enter **/SNAHIST** at a ===> prompt. The NEWS : Database Review Menu is displayed (see Figure 13-1).

Figure 13-1. NEWS : Database Review Menu

```
PROD---------------------- NEWS : Database Review Menu ------------------NET001
Select Option ===>

   1   - Device Information
   2   - Events
   3   - Attentions
   4   - Statistics
   5   - RTM Data
   X   - Exit

Node Name  ===>          (full or partial name, blank for selection list,
                          ignored for Option 3)

LU Locaddr ===>          (2...255, if specific LU, else null, option 5 only)
```

The database review menu stores CNM records in five categories:

- Device information
- Events
- Attentions
- Statistics
- RTM data

When you select one of these categories, you are presented with a scrollable selection list. To limit the size of the selection list, enter a full or partial name of a resource in the Node Name field. This field is not valid for option 3.

You can also enter a local LU address to limit the RTM data displayed for option 5.

Displaying Device Information

To access CNM records for devices, enter **1** at the ===> prompt on the NEWS : Database Review Menu (/SNAHIST). You are presented with either a selection list of resources (see Figure 13-2) or the device information for the specified node name, depending on the value of the Node Name field.

Figure 13-2. NEWS : Device Information Panel

```
PROD--------------------- NEWS : Device Information ---------------------NET001
Command ===>                                                 Scroll ===> PAGE

                                        S/=Select D=Delete R=Resync U=Update
    Node       Cnt    Tot     --From Date and Time--    ---To Date and Time---
    NODES4       1      3     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  17.54
    BNEC01       4      4     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  17.44
    C0A1         4      4     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  18.09
    DPU3B        2      2     MON 06-AUG-2001  08.56   WED 15-AUG-2001  14.30
    FANAC1       4      4     MON 06-AUG-2001  08.56   WED 15-AUG-2001  18.01
    FANC01       3      3     MON 06-AUG-2001  08.56   WED 15-AUG-2001  18.01
    FANI01       7      7     MON 06-AUG-2001  08.56   WED 15-AUG-2001  18.02
    FCSRF431     7      7     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    FCSRF442    10     10     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    FCSRF443     6      6     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    FCSRF444     2      2     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    FCS3TEST     4      4     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    LNEA         1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.41
    LPDA2MS      4      4     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.25
    MA9C03       4      4     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.23
    MA9C05       2      2     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.02
    NCP06        3      3     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.23
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For details of the information displayed on this panel, press F1 (Help).

Using Selection List Options

To assist with investigating the solicited information, you can enter options against the resources on the NEWS : Device Information panel. For details of the information displayed and options available on this panel, press F1 (Help).

For more information on displaying device information, see Chapter 11, *Managing and Soliciting Information from Network Devices*.

Displaying Events

To access CNM records for events, enter **2** at the ===> prompt on the NEWS : Database Review Menu (/SNAHIST). You are presented with a selection list of resources (see Figure 13-3), or a selection list of events for a resource, depending on the value you entered in the Node Name field.

Type **S** against any item in a selection list to get more information about events or resources.

Figure 13-3. NEWS : Events Review Panel

```
PROD------------------------ NEWS : Events Review ----------------------NET001
Command ===>                                                  Scroll ===> PAGE

                                      S/=Select D=Delete R=Resync U=Update
    Node       Cnt    Tot     --From Date and Time--    ---To Date and Time---
    ALRT4701     1      1     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  14.23
    NODE01       6      6     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  15.40
    NODE22       4      5     FRI 25-MAY-2001  12.52   TUE 14-AUG-2001  14.53
    CLPERT       1      1     MON 06-AUG-2001  08.56   WED 15-AUG-2001  14.26
    CLSYDN       1      1     MON 06-AUG-2001  08.56   WED 15-AUG-2001  14.20
    C4BD40       1      1     MON 06-AUG-2001  08.56   WED 15-AUG-2001  14.05
    C4HQDC       2      2     MON 06-AUG-2001  08.56   WED 15-AUG-2001  14.28
    DPU12        1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.05
    EOCC01       1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.30
    FANC01       2      2     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.01
    FA025801     1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.35
    FA039B01     1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.35
    FCSRF442     1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.36
    FCSRF444     1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.10
    FCS4TSTA     3      3     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  18.58
    HUC01400     1      1     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  19.07
    LINE036      8      8     FRI 25-MAY-2001  12.53   WED 19-SEP-2001  14.39
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

For an explanation of the information displayed on the selection list, and actions you can perform at the selection list, see the previous section, *Displaying Device Information*.

Using Events Selection List Options

For details of the information displayed and options available on this panel, press F1 (Help).

Displaying Attentions

To access CNM records for attentions, enter **3** at the ===> prompt on the NEWS : Database Review Menu (/SNAHIST). The NEWS : Attentions Review panel is displayed, containing a selection list of attentions.

When NEWS produces an attention, it is logged in chronological order in the attention category. It appears on the Attentions Review panel in *reverse* chronological order.

Figure 13-4. NEWS : Attentions Review Panel

```
PROD--------------------- NEWS : Attentions Review -------------------------FTI
Command ===>                                                  Scroll ===> CSR

                                                            S/=Select D=Delete
                        Total Records: 40
    Node      Arrival Time-Date   Type Description
    *TCP/IP* 11:33:03 MON 20-AUG  USER UNDETERMINED ERROR
    *TCP/IP* 11:33:03 MON 20-AUG  USER UNDETERMINED ERROR
    QANM22D1 19:04:00 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    SSMC22   17:06:36 FRI 17-AUG  TEMP SSMC22K1: PROTOCOL ABOVE LINK LEVEL (SNA
    SSMC22   17:06:36 FRI 17-AUG  TEMP SSMC22D6: PROTOCOL ABOVE LINK LEVEL (SNA
    SSMC22   17:06:35 FRI 17-AUG  TEMP SSMC2255: PROTOCOL ABOVE LINK LEVEL (SNA
    SSMC22   17:06:22 FRI 17-AUG  TEMP SSMC2204: PROTOCOL ABOVE LINK LEVEL (SNA
    XC300QA2 16:23:32 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:23:30 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:23:21 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:21:46 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:21:45 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:16:28 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300QA2 16:16:26 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    YC300QA1 16:14:40 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
    XC300ZA1 16:14:39 FRI 17-AUG  USER SOFTWARE PROGRAM ERROR
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap                 F11=Right
```

Using Attentions Selection List Options

For details of the information displayed and the options available on this panel, press F1 (Help).

Displaying Statistics

To access CNM records for statistics, enter **4** at the ===> prompt on the NEWS : Database Review Menu (/SNAHIST). A statistics summary of all the nodes is displayed. Figure 13-5 is an example.

If you specified a resource in the Node Name field on the NEWS : Database Review Menu, you will see the summary line for that resource alone.

Figure 13-5. NEWS : Statistics Review

```
PROD---------------------- NEWS : Statistics Review --------------------NET001
Command ===>                                                 Scroll ===> PAGE

                                 S/=Select D=Delete G=Graph R=Resync U=Update
    Node       Cnt   Tot  -From- --To--  Sent-Data Sent-Err  Rcvd-Data Rcvd-Err
    AIBM11       7     7  14-JUN 18-JUN       1248        0       1002        0
    NODE22      11    11  06-MAY 18-JUN     196947        0     143997        0
    NODE24      25   280  06-MAY 18-JUN        812        0        276        0
    NODE31      25    69  06-MAY 18-JUN        304        0        128        0
    NODE32      25    69  06-MAY 18-JUN       1618        0       1419        0
    CLPERT       2     2  19-AUG 09-JAN       7312      488       4260        0
    C4HQDC       3     9  12-AUG 19-AUG      63188     4076        660      381
    FANP01       1     6  09-JUL 19-AUG       9753        0       6819        0
    LINE036     12    16  12-AUG 09-JAN      23599     3141      18553        0
    SDPC01       9    14  06-MAY 06-JAN      19417      188      10528        0
    SDPC02       3     4  06-MAY 06-JAN        848       77        489        0
    SD1HCAP1     3     3  14-JUN 18-JUN     195837        0     154517        0
    S1PU07       3    67  30-JAN 06-JAN       6518      321       7750       23
    S2PU01       3     4  06-FEB 10-JAN        684        0        172        0
    S2PU10       5    16  30-JAN 09-JAN      16520      143      10935        0
    S2PU11       3    86  13-DEC 09-JAN      71939     1543      39375       31
    NODE11       1     1  14-JUN 14-JUN       1433        0       1883        0
 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

Using Statistics Summary Selection List Options

For details of the information displayed and options available on this panel, press F1 (Help).

Displaying Statistics for a Particular Node

To display details of the statistics for a resource, enter **S** next to that resource in a statistics review selection list. For example, if the value of the Cnt field for the node you want to select is 25, entering **S** next to this node shows details about each of the 25 statistics. Figure 13-6 shows details of the statistics for NODE01, which had a value of 11 in the Cnt field.

Figure 13-6. NEWS : Statistics Review

```
PROD----------------------- NEWS : Statistics Review ------------------NET001
Command ===>                                                 Scroll ===> PAGE

                                                          S/G=Graph D=Delete
    Node: NODE01        Total Records: 11
    --Arrival Date and Time--  Sent Data Sent-Err  Rcvd-Data Rcvd-Err  LU
    TUE 18-JUN-1996  13:01:49      32768        0      24748        0
    TUE 18-JUN-1996  09:01:26      32768        0      24136        0
    MON 17-JUN-1996  16:48:59      32768        0      25828        0
    MON 17-JUN-1996  12:43:07      32768        0      24491        0
    MON 17-JUN-1996  08:55:31      32768        0      21509        0
    FRI 14-JUN-1996  15:37:11      32768        0      23149        0
    MON 06-MAY-1996  20:26:26         71        0         27        0
    MON 06-MAY-1996  20:12:34         82        0         34        0
    MON 06-MAY-1996  19:58:40         65        0         26        0
    MON 06-MAY-1996  19:44:48         56        0         25        0
    MON 06-MAY-1996  19:30:57         65        0         24        0
    **END**




 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap
```

Using Statistics Detail Selection List Options

For details of the information displayed and options available on this panel, press F1 (Help).

Displaying Error and Traffic Statistics

To access a graphical display of the error/traffic ratios, enter **G** next to a statistics entry in a selection list. Figure 13-7 displays the error/traffic statistics for the first statistics entry in Figure 13-6.

Figure 13-7. NEWS : Error/Traffic Statistics Panel

```
PROD--------------------- NEWS : Error/Traffic Statistics ---------------NET001
COMMAND ===>                                                    NODE:   NODE01

     |   NTWK   |__|   SSCP   |__|   COMC   |_____ LINE _____|   CTRL   |
     |  NTWK01  |  |  SSCP01  |  |  NCP01   |     LINE01     |  NODE01  |



Accumulated stats:    from WED 05-MAY-1994 to FRI 05-JAN-1996 (14 records)
Presently held stats: from FRI 05-JAN-1996 to FRI 05-JAN-1996 (1 records)



                              ERROR / TRAFFIC RATIO PERCENTAGE
                         0----10---20---30---40---50---60---70---80---90---100

Accumulated records      ================================>

Presently held records   ================================>



Press ENTER for Statistics Distribution (average per record)
```

The Error/Traffic Statistics panel provides information about the presently held error/traffic ratios and accumulated error/traffic ratios. Comparing the presently held statistics against those accumulated allows any trends for the particular resource to emerge.

By pressing ENTER, you can obtain the statistics distribution for the statistics entry, as shown in Figure 13-8.

Figure 13-8. NEWS : Statistics Distribution Panel

```
PROD--------------------- NEWS : Statistics Distribution ----------------NET001
COMMAND ===>                                                    NODE:   NODE01

     |   NTWK   |__|   SSCP   |__|   COMC   |_____ LINE _____|   CTRL   |
     |  NTWK01  |  |  SSCP01  |  |  NCP01   |     LINE01     |  NODE01  |

Accumulated stats: from WED 05-MAY-1994 to FRI 05-JAN-1996 (14 records)

Sent data  9708=================================================================>
Sent err   94>

Rcvd data  5264================================>
Rcvd err   0>

Presently held stats: from FRI 06-JAN-1989 to FRI 06-JAN-1989 (1 records)

Sent data  1>
Sent err   17>

Rcvd data  0>
Rcvd err   0>

Values shown are averages per record
Press ENTER for Error/Traffic Statistics
```

You can also type **G** next to a resource in a selection list (see Figure 13-5). The resulting graph for presently held records represents an average for all records currently held in the NEWS database.

Displaying Response Time Monitor (RTM) Data

This feature applies to 3174 and 3274 controllers only. RTM data provides information about the performance of your network. To access CNM records for RTM data, enter **5** at the ===> prompt on the NEWS : Database Review Menu (/SNAHIST). A selection list of nodes is displayed.

Displaying RTM Data for a Particular Node

To display RTM data for the required node, enter **S** next to that node in the selection list. The NEWS : RTM Data Review Panel is displayed. Figure 13-9 and Figure 13-10 show the two panels displaying RTM data for ASYD01. To display the second panel from the first panel, press F11.

Figure 13-9. NEWS : RTM Data Review Panel (Page 1 of 2)

```
PROD------------------------ NEWS : RTM Data Review ---------------------NET001
Command ===>                                                 Scroll ===> PAGE

                                                  S/=Select D=Delete G=Graph
    Node: NODE01        Total Records: 4
     LU                                Total    Avg                    Session
    Addr  --Arrival Date and Time--    Trans   Resp   O/T%  LU Name   Partner
    117   FRI 24-MAY-1996  15:28:20      58  120.4   32.7  NODE01B7  N/A
    116   MON 06-MAY-1996  19:32:26     213    0.4    1.4  NODE01B6  SDNM1
    117   MON 06-MAY-1996  19:31:27      57    7.7   26.3  NODE01B7  SDNM1
    115   MON 06-MAY-1996  19:28:19      99    0.5    2.0  NODE01B5  SDTSO045
    **END**









 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap                 F11=Right
```

Figure 13-10.NEWS : RTM Data Review Panel (Page 2 of 2)

```
PROD------------------------ NEWS : RTM Data Review ---------------------NET001
Command ===>                                                 Scroll ===> PAGE

                                                  S/=Select D=Delete G=Graph
    Node: NODE01        Total Records: 4
     LU   Resp   Recv   Data  ---Bndy1-- ---Bndy2-- ---Bndy3-- ---Bndy4--  Oflo
    Addr  Defn   Ind    Loss   Cntr Secs  Cntr Secs  Cntr Secs  Cntr Secs  Cntr
    117   CD/EB  Unbnd   No      15  0.5     9  1.0     9  2.0     6  5.0    19
    116   CD/EB  Unbnd   No     175  0.5    14  1.0    16  2.0     5  5.0     3
    117   CD/EB  Unbnd   No       8  0.5    21  1.0     5  2.0     8  5.0    15
    115   CD/EB  Unbnd   No      81  0.5     9  1.0     3  2.0     4  5.0     2
    **END**









 F1=Help      F2=Split     F3=Exit      F4=Return    F5=Find      F6=Refresh
 F7=Backward  F8=Forward   F9=Swap     F10=Left
```

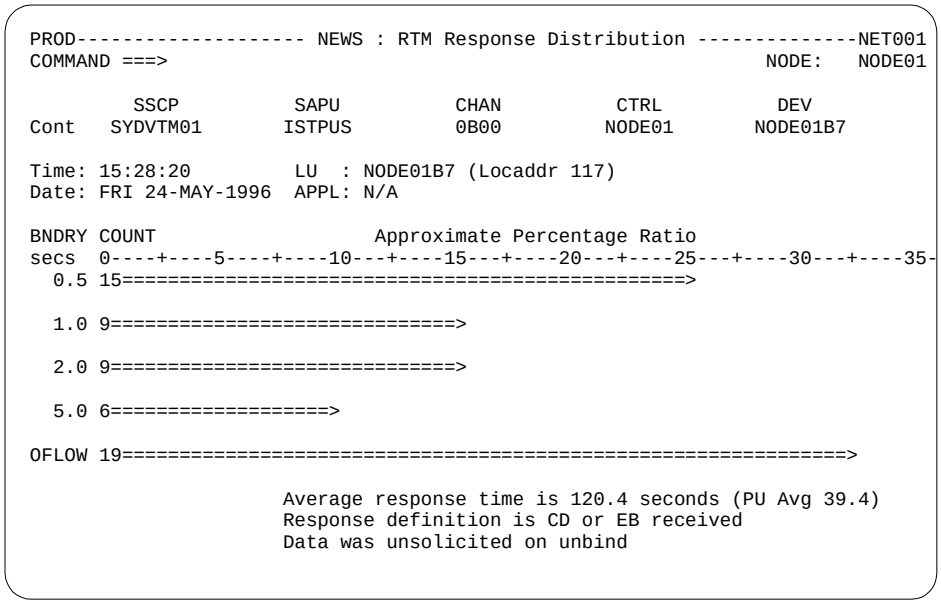
Using RTM Data Review Panel Options

For details of the information displayed and options available on this panel, press F1 (Help).

Displaying RTM Response Distribution

To access a graphical display of the RTM response distribution for a resource, enter **G** next to the required resource in the selection list in Figure 13-9. Figure 13-11 shows the RTM response distribution for the first LU in Figure 13-9

Figure 13-11. NEWS : RTM Response Distribution Panel



The panel provides a bar graph showing the distribution of responses across the various boundaries. In addition to the actual count (shown within the bar of the graph), the percentage of responses in each boundary is indicated by the scale displayed. This shows at a glance where the majority of responses are falling and thus whether the boundary settings may be more appropriately adjusted to improve the 3174 or 3274 RTM statistical information.

To access more detailed information for this record, press F3 to return to the selection list of RTM data, and enter **S** next to the line for this entry.

14

Displaying and Monitoring Network Activity

This chapter describes how to display and monitor system activity using the Network Tracking System (NTS).

This chapter discusses the following topics:

- About Displaying and Monitoring System Activity
- Monitoring Resources
- Monitoring Sessions
- Monitoring Subareas
- Monitoring Routes

About Displaying and Monitoring System Activity

NTS builds a model of your network environment to allow you to monitor all system activity. The network model provides you with the ability to monitor the following:

- Resources
- Sessions
- Subareas and subordinate resources
- Virtual and explicit routes

Monitoring Resources

Monitoring your resources allows you to keep track of the status of these resources. You can use this list to help locate inactive resources that may be the cause of session failure. NTS provides a selection list of resources from which you can obtain information about your resources and their connected sessions.

To access a selection list of resources, enter **1** at the ===> prompt on the NTS : Primary Menu (/SNASESS). The NTS : Resource List is displayed.

Figure 14-1. NTS : Resource List

```
PROD------------------------ NTS : Resource List -----------------------NET001
COMMAND ===>              REFERENCE NETWORK: SDINET1           SCROLL ===> PAGE

    Res-Name Type Status       Res-Name Type Status       Res-Name Type Status
    ACSIC1   PU    ACT/S       ACSIC2   PU    ACT/S       ACSI320A LU    ACT/S
    ACSI320B LU    ACT/S       ACSI320C LU    ACT/S       ACSI320D LU    ACT/S
    ACSI320E LU    ACT/S       ACSI320F LU    ACT/S       ACSI3200 LU    ACT/S
    ACSI3201 LU    ACT/S       ACSI3202 LU    ACT/S       ACSI3203 LU    ACT/S
    ACSI3204 LU    ACT/S       ACSI3205 LU    ACT/S       ACSI3206 LU    ACT/S
    ACSI3207 LU    ACT/S       ACSI3208 LU    ACT/S       ACSI3209 LU    ACT/S
    ACSI321A LU    ACT/S       ACSI321B LU    ACT/S       ACSI321C LU    ACT/S
    ACSI321D LU    ACT/S       ACSI321E LU    ACT/S       ACSI321F LU    ACT/S
    ACSI3210 LU    ACT/S       ACSI3211 LU    ACT/S       ACSI3212 LU    ACT/S
    ACSI3213 LU    ACT/S       ACSI3214 LU    ACT/S       ACSI3215 LU    ACT/S
    ACSI3216 LU    ACT/S       ACSI3217 LU    ACT/S       ACSI3218 LU    ACT/S
    ACSI3219 LU    ACT/S       ACSI3497 LU    ACT/S       ACSI3498 LU    ACT/S
    ACSI3499 LU    ACT/S       ACSI3501 LU    ACT/S       ACSI3502 LU    ACT/S
    ACSI3503 LU    ACT/S       ACSI3504 LU    ACT/S       ACSI3505 LU    ACT/S
    ACSI3506 LU    ACT/S       ACSI3507 LU    ACT/S       ACSI3508 LU    ACT/S
    ACSI3509 LU    ACT/S       ACSI3510 LU    ACT/S       ACSI3511 LU    ACT/S
    ACSI3512 LU    ACT/S       ACSI3513 LU    ACT/S       ACSI3514 LU    ACT/S
    ACSI3515 LU    ACT/S       ACSI3516 LU    ACT/S       ACSI3517 LU    ACT/S
    ACSI3518 LU    ACT/S       ACSI3519 LU    ACT/S       ACSI3520 LU    ACT/S
    ACSI3521 LU    ACT/S       ACSI3522 LU    ACT/S       ACSI3523 LU    ACT/S
```

For details of the information displayed and options available on this panel, press F1 (Help).

Resource Selection List Options

A list of sessions, in which a resource is one of the partners, can be displayed by entering one of the available options next to an entry in the list. Some of these options change the scope from the value initially entered on the NTS : Primary Menu. For details of the options available on this panel, press F1 (Help).

Note

These selection options provide the same information as displayed when listing sessions as described in the next section, *Monitoring Sessions*.

Monitoring Sessions

Monitoring the sessions in your network allows you to keep track of session starts and failures. NTS allows you to monitor any session which has an end point in, or traverses, the local system. A selection list of sessions is provided, from which you can obtain information about the type and status of your sessions, as well as associated data that can be used in problem determination.

There are two options for listing sessions on the NTS : Primary menu:

- Option 2—Displays a selection list of sessions ordered by primary LU.
- Option 3—Displays a selection list of sessions ordered by secondary LU.

Listing Primary and Secondary Sessions

To list primary sessions, enter **2** at the ===> prompt on the NTS : Primary Menu (/SNASESS). To list secondary sessions, enter **3** at the ===> prompt on the NTS : Primary Menu (/SNASESS). The NTS : Session List is displayed. Figure 14-2 is an example of a primary session list.

Figure 14-2. NTS : Session List

```
PROD-------------------------NTS : Session List ----------------------NET001
COMMAND ===>                                                 SCROLL ===> PAGE

    Sec-Name Pri-Ntwk Pri-Name  Sess-Type   Session-Start   Session-End    Data
    XSYD1C   NET001   SDD1VTM1  SDOM SS-PU  06/10 20:04:38  *** ACTIVE ***
    XSYD1CCP NET001   SDD1VTM1  XDOM CP-CP  06/10 20:04:48  *** ACTIVE ***
    XSYD1C0B NET001   SDD1VTM1  SDOM SS-LU  06/10 20:04:42  *** ACTIVE ***
    XSYD1C0C NET001   SDD1VTM1  SDOM SS-LU  09/10 10:30:52  *** ACTIVE ***
    XSYD1C0D NET001   SDD1VTM1  SDOM SS-LU  09/10 10:30:52  *** ACTIVE ***
    XSYD1C03 NET001   SDD1VTM1  SDOM SS-LU  06/10 20:04:40  *** ACTIVE ***
    XSYD1C04 NET001   SDD1VTM1  SDOM SS-LU  06/10 20:04:40  *** ACTIVE ***
    XSYD1C05 NET001   SDD1VTM1  SDOM SS-LU  06/10 20:04:41  *** ACTIVE ***
    XSYD1R   NET001   SDD1VTM1  SDOM SS-PU  08/10 11:20:02  *** ACTIVE ***
    XSYD1R02 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:02  *** ACTIVE ***
    XSYD1R02 NET001   STNM1     XDOM LU-LU  08/10 16:01:11  *** ACTIVE ***
    XSYD1R03 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:02  *** ACTIVE ***
    XSYD1R04 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:03  *** ACTIVE ***
    XSYD1R05 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:03  *** ACTIVE ***
    XSYD1S   NET001   SDD1VTM1  SDOM SS-PU  08/10 11:20:02  *** ACTIVE ***
    XSYD1S02 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:03  *** ACTIVE ***
    XSYD1S03 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:03  *** ACTIVE ***
    XSYD1S04 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:03  *** ACTIVE ***
    XSYD1S05 NET001   SDD1VTM1  SDOM SS-LU  08/10 11:20:04  *** ACTIVE ***
    XSYD11   NET001   SDD1VTM1  SDOM SS-PU  08/10 11:18:48  *** ACTIVE ***
```

For details of the information displayed and options available on this panel, press F1 (Help).

A particular resource can be located in the list by entering **L** ***resource-name*** at the ===> prompt. The resource-name value can be either a full or a partial resource name.

Filtering Session List Information

You can change the information displayed on your session list by using the filtering option.

To access session list filter options, enter **F** or **FILTER** at the ===> prompt on the NTS : Session List. The NTS : Modify Session List panel is displayed.

Figure 14-3. NTS : Modify Session List Panel

```
PROD----------------------- NTS : Modify Session List -----------------NET001

Overtype options and press ENTER to modify session list, PF03 to cancel.

   SCOPE           ===> A        H History, A Active, blank All
   SEQUENCE        ===> S        P Primary, S Secondary

Session type/userid/data filters

   SESSION TYPE    ===>          Valid types: LL SL SP SS MAI CC
   SESSION USERID  ===>          USERID for MAI session(s) only
   SESSION DATA    ===>          A Acc, E Err, R RTM, T Trace

Session start/end time filters

   START DATE LOW  ===>            END DATE LOW    ===>
   START TIME LOW  ===>            END TIME LOW    ===>
   START DATE HIGH ===>            END DATE HIGH   ===>
   START TIME HIGH ===>            END TIME HIGH   ===>

   Dates in YY/MM/DD format, times in HH.MM.SS format, blank for any value.
```

You can modify the following:

SCOPE
Can be set to include or exclude either active or database session data.

SEQUENCE
Allows session lists to be reordered by either primary name or secondary name sequence as specified.

SESSION TYPE
Filters the session list by session type.

SESSION USERID
Filters the session list by user ID. Applies to MAI sessions only.

SESSION DATA
Filters the session list by session data flag presence.

Note

The above options are also available from the NTS : Primary Menu (/SNASESS), but you use them here for convenience.

Session Start Date/Time

Allows a high date and time, and/or low date and time to be used to restrict the session list to sessions with start times in the range specified. If either the high or low date/time is blank, then no high/low restriction is enforced.

Session End Date/Time

Allows a high date and time, and/or low date and time to be used to restrict the session list to sessions with end times in the range specified. If either the high or low date/time is blank, then no high/low restriction is enforced.

Once filters have been set, they are remembered for the duration of the operator's NTS session. To turn the filters on and off, enter **F**(**ILTER**) **ON** or **F**(**ILTER**) **OFF** at the ===> prompt.

Accessing Associated Session Data

You can access additional information about a session by entering various options against the required session in the NTS : Session List.

For details of the options available on this panel, press F1 (Help).

These options can be used for performance analysis and problem determination. See Chapter 15, *Analyzing Performance and Determining Problems,* for information on how these options are used.

Monitoring Subareas

Listing subareas allows you to view resources that are peers in the network hierarchy. The display varies depending upon the hierarchical level being displayed.

To list subareas, enter **4** at the ===> prompt on the NTS : Primary Menu (/SNASESS). The NTS : Resource Hierarchy panel is displayed.

Figure 14-4. NTS : Resource Hierarchy List

```
PROD---------------------- NTS : Resource Hierarchy --------------------NET001
COMMAND ===>                                                SCROLL ===> PAGE

   Subarea   Type   Address Elem   Act-Pus   Act-Lus   Act-XNS   Act-XNL
   NCP01C    NCP   0000000F 0000        19       552         3        12
   SYDVTM01  SSCP  00000001 0001         3       303         0         0
   **END**
```

For details of the information displayed and options available on this panel, press F1 (Help).

Note

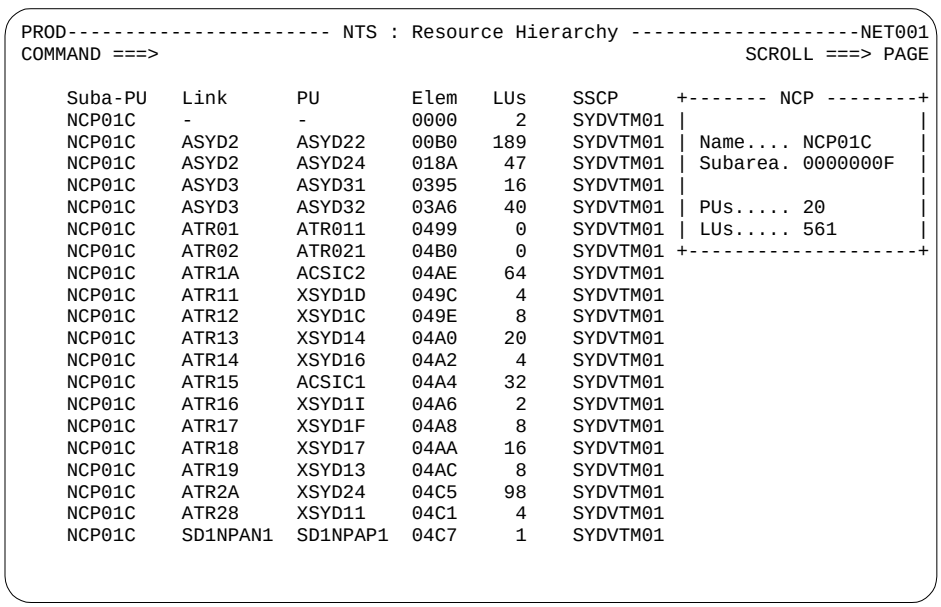
A resource is visible to NTS if:

- It is an SSCP which has an active CDRM session.
- It is an active same-domain LU or PU.
- It is a cross-domain or cross-network LU in session with a local LU.
- It is a PU for a visible X-DOM LU and an NTS-NTS ISR link is enabled. between the local NTS system and the NTS system of the owning SSCP

Listing Subordinate Resources

To list subordinate resources for a subarea, enter **H** next to a subarea on the NTS : Resource Hierarchy list. The resource hierarchy for that subarea is displayed.

Figure 14-5. NTS : Resource Hierarchy



A graphical representation of the upper hierarchy is shown on the right.

For details of the information displayed and options available on this panel, press F1 (Help).

Monitoring Routes

Monitoring routes allows you to keep track of the routes that data is taking in your network. NTS allows you to monitor both virtual and explicit routes and the number of session that are using these routes.

Monitoring Virtual Routes

To list virtual routes, enter **5** at the ===> prompt on the NTS : Primary Menu (/SNASESS). The NTS : Virtual Route List is displayed.

Figure 14-6. NTS Virtual Route List

```
PROD----------------------- NTS : Virtual Route List ------------------NET001
COMMAND ===>                                                SCROLL ===> PAGE

    OSA-name    DSA-name      OSA-addr    DSA-addr    VR    ER   RER   Sessions
    SDD1VTM1    SDD1VTM1      0000000E    0000000E     0     0     0        512
    SDD1VTM1    NCP1603       0000000E    00000010     0     0     0        288
    **END**
```

For details of the information displayed and options available on this panel, press F1 (Help).

Options C and VST can be used for performance analysis and problem determination. See *Chapter 15, Analyzing Performance and Determining Problems*, for information on how these options are used.

Monitoring Explicit Routes

To list explicit routes, enter **6** at the ===> prompt on the NTS : Primary Menu (/SNASESS). The NTS : Explicit Route List is displayed.

Figure 14-7. NTS Explicit Route List

```
PROD----------------------- NTS : Explicit Route List -----------------NET001
COMMAND ===>                                                SCROLL ===> PAGE

    OSA-name    DSA-name      OSA-addr    DSA-addr          ER         Sessions
    SYDVTM01    SYDVTM01      00000001    00000001           0              496
    SYDVTM01    NCP01C        00000001    0000000F           0              639
    NCP01C      SYDVTM01      0000000F    00000001           0              639
    **END**
```

For details of the information displayed and options available on this panel, press F1 (Help).

Option C can be used for performance analysis and problem determination. See *Chapter 15, Analyzing Performance and Determining Problems*, for information on how these options are used.

15

Analyzing Performance and Determining Problems

This chapter describes how to monitor network performance by using the Network Tracking System (NTS).

This chapter discusses the following topics:

- About Analyzing Performance and Determining Problems
- Analyzing Performance Using RTM Data
- Analyzing Performance Using Resource Statistics
- Determining Problems Using Error, Accounting, and Configuration Data
- Determining Problems by Tracing Sessions
- Controlling NTS Session Tracing
- Determining Problems by Testing Routes

About Analyzing Performance and Determining Problems

Analyzing the performance of your network is important for identifying potential problems before they occur. If performance is slow, you need to find out the cause and locate the component responsible so that the problem can be rectified.

NTS provides performance analysis and problem determination tools to assist you in this task.

Analyzing Performance Using RTM Data

RTM data provides you with vital data for analyzing the performance of your network. You can access RTM data about a particular session to find out how long it takes for data to pass between resources in a session. If the response time exceeds expected objectives, then an alert is raised and sent to NEWS.

Using RTM Data for a Session

To display RTM data for a session, enter **R** beside a session in the NTS : Session List. The NTS : Session RTM Data panel is displayed.

Figure 15-1. NTS : Session RTM Data Panel

```
PROD----------------------- NTS : Session RTM Data -------------------------NET001
COMMAND ===>

Session start:   13:51:58  27/09/01      RTM start:     13:51:58  27/09/01
Session end:          *ACTIVE*           RTM end:       11:51:39  28/09/01


          +---- PRIMARY LU ----+                +--- SECONDARY LU ---+
          | Name..... PROD     |                | Name..... SSMC22K2 |
          | Network.. NET001   |                | Network.. NET001   |
          | SSCP..... SDD1VTM1 |                | SSCP..... SDD1VTM1 |
          +--------------------+                +--------------------+


Boundaries Set      Value     Count      Class Information
             1        1.0         1        RTM performance class.....    RTMSYD
             2        2.0         1        Response measured to a CD or EB rcvd
             3        3.0         0        Objective response time...       1.0
             4        5.0         1        Objective response pct....        75
                 Overflow         0
                                           Performance Analysis
Total transaction count..          3        Responses under objective.         1
Total response time......        6.7        Percentage under objective        33
Average response time....        2.2        RTM objectives met........        NO
```

If there is RTM data from a NetSpy agent available for the selected session, this data is included on the NTS : Session RTM Data panel displayed. This data is shown here in **bold** print.

Figure 15-2. NTS : Session RTM Data Panel with Data from a NetSpy Agent

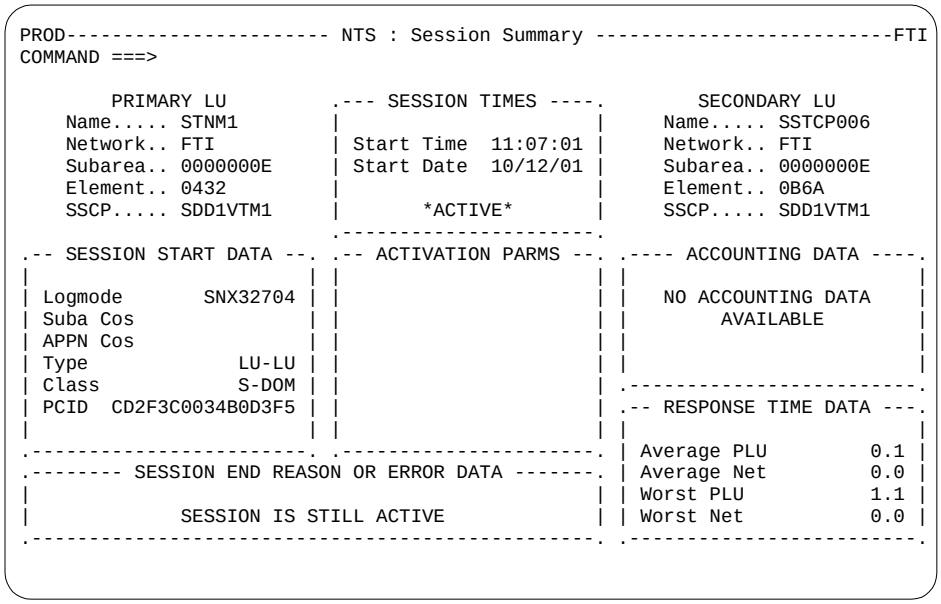
```
PROD---------------------- NTS : Session RTM Data -------------------------NET001
COMMAND ===>

Session start:   13:51:58  27/09/01      RTM start:     13:51:58  27/09/01
Session end:          *ACTIVE*           RTM end:       11:51:39  28/09/01

          +---- PRIMARY LU ----+                +--- SECONDARY LU ---+
          | Name..... PROD     |                | Name..... SSMC22K2 |
          | Network.. NET001   |                | Network.. NET001   |
          | SSCP..... SDD1VTM1 |                | SSCP..... SDD1VTM1 |
          +--------------------+                +--------------------+

Current Interval Data
Average PLU..         0.3   Average Net..         1.1
Worst PLU....         0.9   Worst Net....         2.5

Boundaries Set      Value     Count      Class Information
             1        1.0         1        RTM performance class.....    RTMSYD
             2        2.0         1        Response measured to a CD or EB rcvd
             3        3.0         0        Objective response time...       1.0
             4        5.0         1        Objective response pct....        75
                 Overflow         0
                                           Performance Analysis
Total transaction count..         3        Responses under objective.         1
Total response time......       6.7        Percentage under objective        33
Average response time....       2.2        RTM objectives met........        NO
```

For details of the information displayed and options available on this panel, press F1 (Help).

Using RTM Data for a Logical Unit

To display RTM data for an LU, enter **S** next to an LU entry on the Resource List. If a list of sessions for the LU is displayed, enter **S** next to a session entry. If there is any RTM data available for that session for the LU, it is displayed on the NTS : Session Summary panel. If RTM data from both NTS and a NetSpy agent is available, the data from the NetSpy agent is displayed.

Figure 15-3. NTS : Session Summary Panel



For details of the information displayed and options available on this panel, press F1 (Help).

Analyzing Performance Using Resource Statistics

Resource statistics are also useful for analyzing performance. The resource statistics menu allows you to display statistics collected for selected resources over specified intervals. These statistics include the number, size, and rate of data being received and sent for a particular resource.

To access resource statistics, enter **8** at the ===> prompt on the NTS : Primary Menu. The NTS : Resource Statistics Menu is displayed.

Figure 15-4. NTS : Resource Statistics Menu

```
PROD------------------ NTS : Resource Statistics Menu ---------------NET001
Select Option ===>

   1   - Message Rates
   2   - Message Counts
   3   - Message Sizes
   4   - Message Types
   5   - Response Times
   6   - Line Utilization
   X   - Exit


Resource Name ===>                Name* or blank for list by resource type
Resource Type ===> SUBAREA        S Subarea, LI Link, P PU or L LU

Time          ===>                HH.MM for specific interval, blank for latest
Date          ===>                YY/MM/DD for end time specified above

Rate          ===> MIN            per H hour, M min, S sec, for rate displays

Line Desc     ===> H9600          Tn where T is either F (full) or H (half)
                                  duplex, and n is the line speed in bps

SSCP Name     ===> SYDVTM01       Name of SSCP owning resources
```

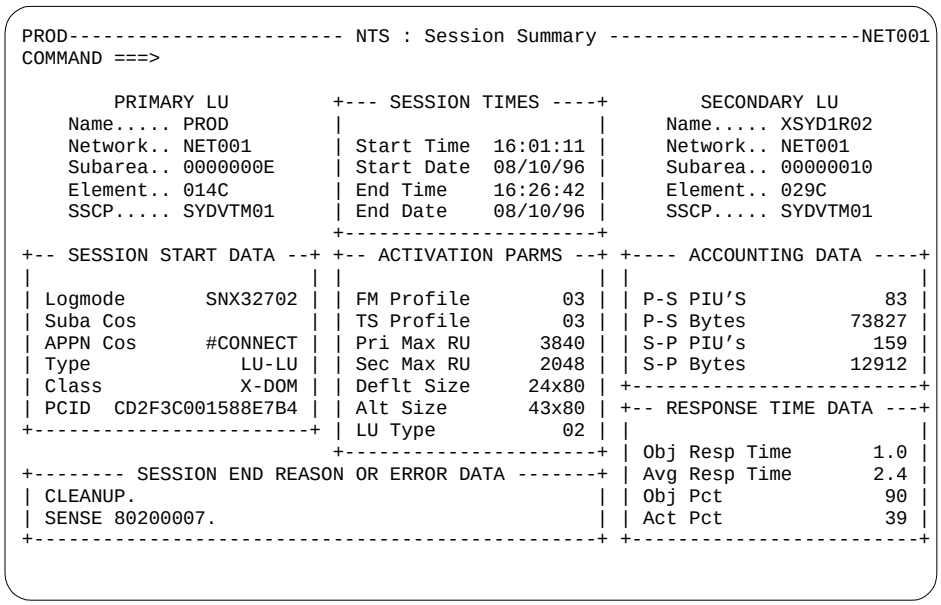
For details of the options and input fields available on this panel, press F1 (Help).

Determining Problems Using Error, Accounting, and Configuration Data

The first place to start when investigating problems is to investigate summary information about the session in question. The session summary can give clues as to the nature and cause of a problem, and where to look for more information.

To display summary information for a session, enter **S** beside a session in the NTS : Session List. The NTS : Session Summary is displayed.

Figure 15-5. NTS : Session Summary



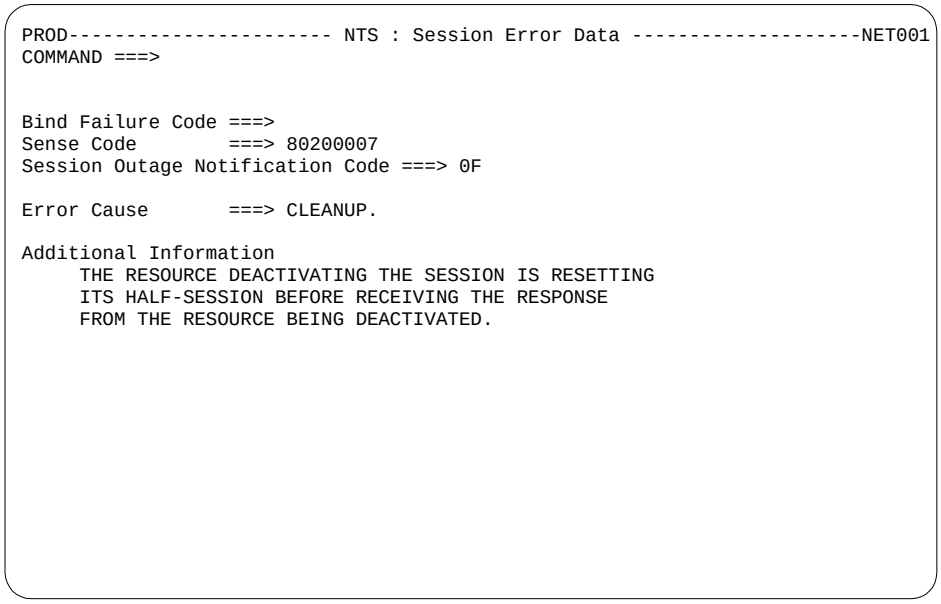
This panel is a graphical display of all the information available about the selected session. For more information on each area of information, see the following sections.

Using Error Data

Error data provides the error code and description for an error that occurs in a session.

To display error data for a session, enter **E** beside a session in the NTS : Session List. The NTS : Session Error Data panel is displayed.

Figure 15-6. NTS : Session Error Data Panel



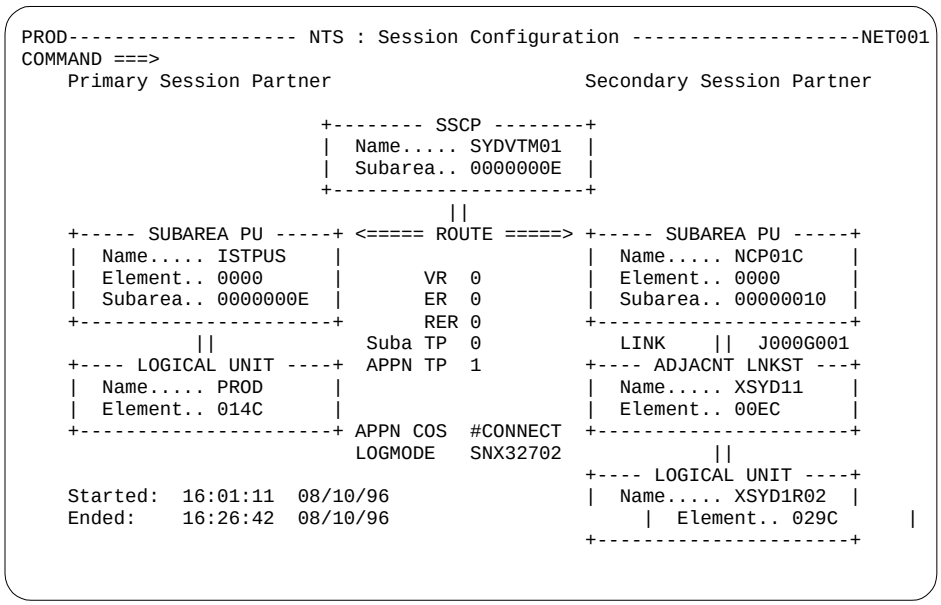
For details of the information displayed on this panel, press F1 (Help).

Using Configuration Data

Configuration data provides you with a graphical display of the network components that comprise the end-points of a session connection. It provides details of the SNA hierarchy for both session partners.

To display configuration data for a session, enter **C** beside a session in the NTS : Session List. The NTS : Session Configuration panel is displayed.

Figure 15-7. NTS : Session Configuration Panel



The example in Figure 15-7 shows sessions where the primary logical unit is an application residing on the host and the secondary logical unit is a terminal connected through an APPN network.

The primary session partner's hierarchy is shown on the left side of the panel and the secondary session partner's hierarchy is shown on the right side of the panel. The right side shows the resource connectivity of an LU in an APPN network.

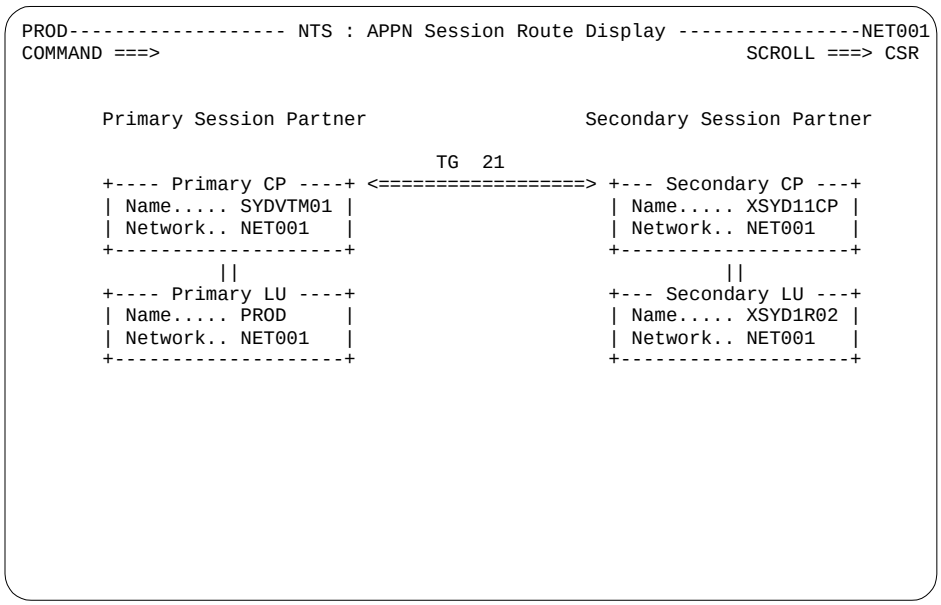
For details of the information displayed on this panel, press F1 (Help).

Using Session Route Data

Session route data provides you with a graphical display of the route which an APPN session takes through the network.

To display the network route for a session, enter **AR** beside the session you want on the NTS : Session List. The NTS : APPN Session Route Display panel is displayed.

Figure 15-8. NTS : APPN Session Route Display Panel



The route from the primary session partner to the local host is shown on the left side of the panel. The route from the local host to the secondary session partner is shown on the right side of the panel. The primary and secondary session partners can be logical units or control points. If the session partner is an LU, then its owning control point is shown.

Also shown are the logical links in the session route and the transmission group number assigned to the transmission group by the primary-side node.

For details of the information displayed and options available on this panel, press F1 (Help).

Using Accounting Data

Accounting data provides traffic information about each partner in a session connection. It provides the number and size of data sent in each direction and the number of negative and position responses to data transmission.

To display accounting data for a session, enter **A** beside a session in the NTS : Session List. The NTS : Session Accounting panel is displayed.

Figure 15-9. NTS : Session Accounting Panel

```
PROD----------------------- NTS : Session Accounting------------------NET001
COMMAND ===>

Session start:   16:01:11  08/10/96     Accounting start:   16:01:11  08/10/96
Session end:     16:26:42  08/10/96     Accounting end:     16:26:42  08/10/96

        Primary Session Partner               Secondary Session Partner

        +---- LOGICAL UNIT ----+              +---- LOGICAL UNIT ----+
        |  Name..... PROD      |              |  Name..... XSYD1R02  |
        |  Network.. NET001    |              |  Network.. NET001    |
        |  SSCP..... SYDVTM01  |              |  SSCP..... SYDVTM01  |
        +----------------------+              +----------------------+

     Pri ==> Sec Traffic Statistics         Sec ==> Pri Traffic Statistics

     Control PIU's.......         2         Control PIU's.......         2
     Control Bytes.......       109         Control Bytes.......        61
     Data PIU's..........        81         Data PIU's..........       157
     Data Bytes..........     73718         Data Bytes..........     12851
     Average Data Count..      3783         Average Data Count..      1019
     Maximum Data Count..       929         Maximum Data Count..       189
     Positive Responses..         2         Positive Responses..        92
     Negative Responses..         0         Negative Responses..         0
```

For details of the information displayed and options available on this panel, press F1 (Help).

Determining Problems by Tracing Sessions

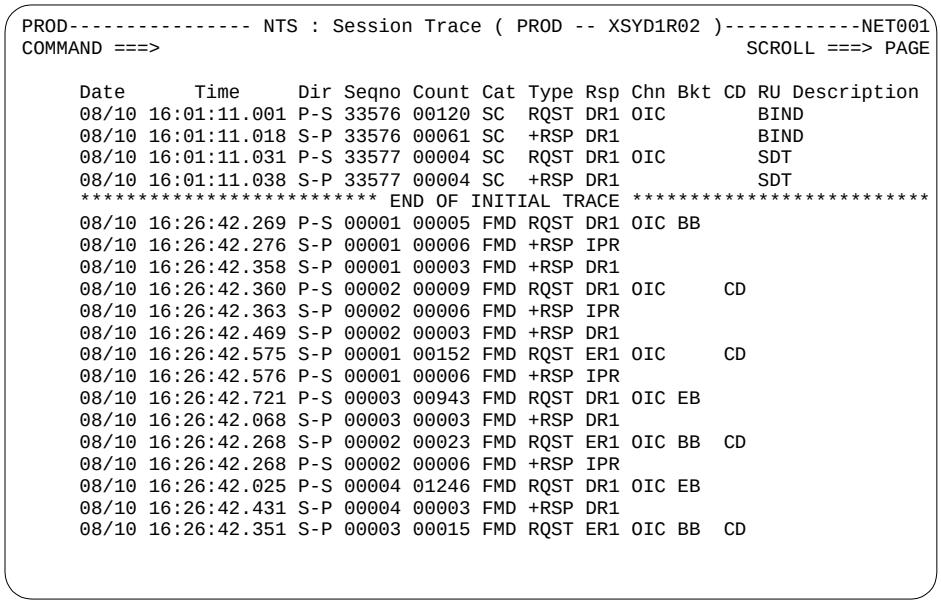
Trace data consists of copies of Path Information Units (PIUs) flowing on the session. You can examine this information to determine the cause of unsuccessful session activation.

When a trace is performed, information is placed in two queues:

- Initial trace queue—useful for searching for session start parameters, such as BIND, ACTPU, ACTLU, or ACTCDRM
- Final trace queue—displays subsequent PIUs after the initial queue is full or session establishment is complete

To display trace data for a session, enter **T** beside a session in the NTS : Session List. The NTS : Session Trace panel is displayed.

Figure 15-10.NTS : Session Trace Panel



To display a trace record in more detail, enter **S** next to an entry in the list. To display a trace record in dump format, enter **D** next to an entry in the list.

For details of the information displayed and options available on this panel, press F1 (Help).

The RU category (displayed in the Cat column) can be any of the following:

Category	Description
SC	Session Control
NC	Network Control
DFC	Data Flow Control
FMD	Function Management Data

Analyzing a Trace

Analyzing a trace allows you to view the following:

- A breakdown of the most important transmission headers (TH) and response headers (RH)
- A hexadecimal display of all the RHs, THs, and RU data
- Sense data for negative response PIUs

To perform an analysis of a trace, enter **S** against a record in the NTS : Session Trace selection list. The NTS : Trace Analysis panel is displayed.

Figure 15-11. NTS : Trace Analysis (Section 1)

```
PROD----------------- NTS : Trace Analysis ( PROD -> XSYD1R02 ) ---------NET001
COMMAND ===>

Transmission Header 40000000 00000000 00000001 00000001 1D00015E 02CE8328 0078
Explicit Route..... 0                   Virtual Route...... 0
Trans. Priority.... 0                   Expedited Flow..... YES
Origin Subarea..... 00000001            Dest. Subarea...... 00000001
Origin Element..... 02CE                Dest. Element...... 015E
Sequence Number.... 33576               Data Count Field... 00120
Segmenting......... ONLY SEGMENT        Direction.......... PRIMARY->SECONDARY

Request Header      6B8000              Category........... SESSION CONTROL
Response Indicator. DR1                 Bracket State...... NO CHANGE
Chaining........... ONLY IN CHAIN       Change Direction... NO

Request Unit        BIND
HEX: 31010303 B1903082 008788F8 87000280 00000000 18502B50 7F000008 E2D6D3E5
HEX: D7D9D6C4 00050007 99DE9808 E7E2E8C4 F1D9F0F2 6019D6EF A678FB1F 937810D5
CHR: .....b gh8g .-    .&.&"  . .PROD  . .r-q.XSYD1R02-.O-w--.l-.NET001.SYDVT




                                                    MORE INFORMATION AVAILABLE..
```

This panel displays a detailed explanation of the trace record selected. The display is in three sections:

- Transmission header (TH)
- Request/response header (RH)
- Request/response unit (RU)

Each section of the trace record is shown in hexadecimal format. The RU is also shown in character format. The meaning of significant fields is displayed. If the selected trace record is for a negative response, then the sense code, category, and description are displayed.

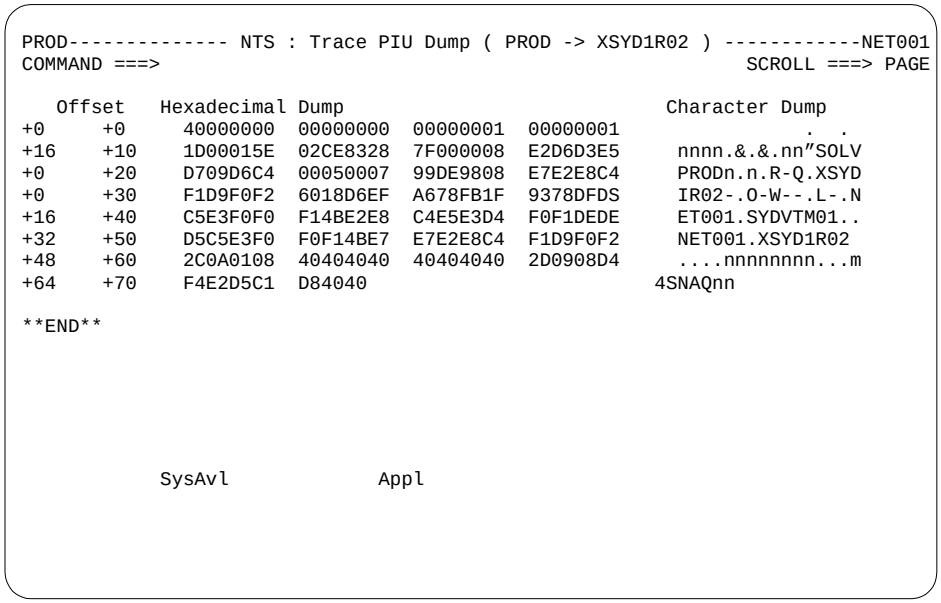
To display specific trace record types, for example, BIND, ACTLU, and negative responses, in greater detail, press F8 (Forward). If more information is available, then a message is displayed at the bottom of the panel.

Displaying a PIU Dump

You can also display a PIU dump for a selected record. A PIU dump displays the full TH, RH, and RU in both hexadecimal and character formats.

To display a dump of the record, enter **D** against a record in the NTS : Session Trace selection list. The NTS : Trace PIU Dump panel is displayed.

Figure 15-12.NTS : Trace PIU Dump Panel



```
PROD-------------- NTS : Trace PIU Dump ( PROD -> XSYD1R02 ) ------------NET001
COMMAND ===>                                                 SCROLL ===> PAGE

   Offset   Hexadecimal Dump                              Character Dump
+0     +0     40000000  00000000  00000001  00000001                .  .
+16    +10    1D00015E  02CE8328  7F000008  E2D6D3E5     nnnn.&.&.nn"SOLV
+0     +20    D709D6C4  00050007  99DE9808  E7E2E8C4     PODn.n.R-Q.XSYD
+0     +30    F1D9F0F2  6018D6EF  A678FB1F  9378DFDS     IR02-.O-W--.L-.N
+16    +40    C5E3F0F0  F14BE2E8  C4E5E3D4  F0F1DEDE     ET001.SYDVTM01..
+32    +50    D5C5E3F0  F0F14BE7  E7E2E8C4  F1D9F0F2     NET001.XSYD1R02
+48    +60    2C0A0108  40404040  40404040  2D0908D4     ....nnnnnnnn...m
+64    +70    F4E2D5C1  D84040                          4SNAQnn

**END**




            SysAvl             Appl
```

Controlling NTS Session Tracing

Tracing can be requested by resource name so that with a single request all sessions with a particular resource, such as an application program, can be traced. NTS provides the NTS : Control Functions menu to start and stop traces, list current traces, and modify a trace.

To control session tracing, enter **C** at the ===> prompt on the NTS : Primary Menu. The NTS : Control Functions menu is displayed.

Figure 15-13.NTS : Control Functions Menu

```
PROD----------------------- NTS : Control Functions --------------------NET001
Select Option ===>

   1   - List Resource Traces
   2   - Start Trace for Resource
   3   - Start Trace for Resource Type
   4   - Stop Trace for Resource
   5   - Stop Trace for Resource Type
   6   - Modify Sessions for Resource
   X   - Exit

Resource Name ===>             Entire Name                     ( Opts 2 4 )

Resource Type ===>             Valid types: LU PU CDRM or ALL  ( Opts 3 5 )
```

For details of the options and input fields available on this panel, press F1 (Help).

Listing Resource Traces

To list resources and their trace status, enter **1** at the ===> prompt on the NTS : Control Functions panel. The NTS : Resource Trace List is displayed.

Figure 15-14.NTS : Resource Trace List

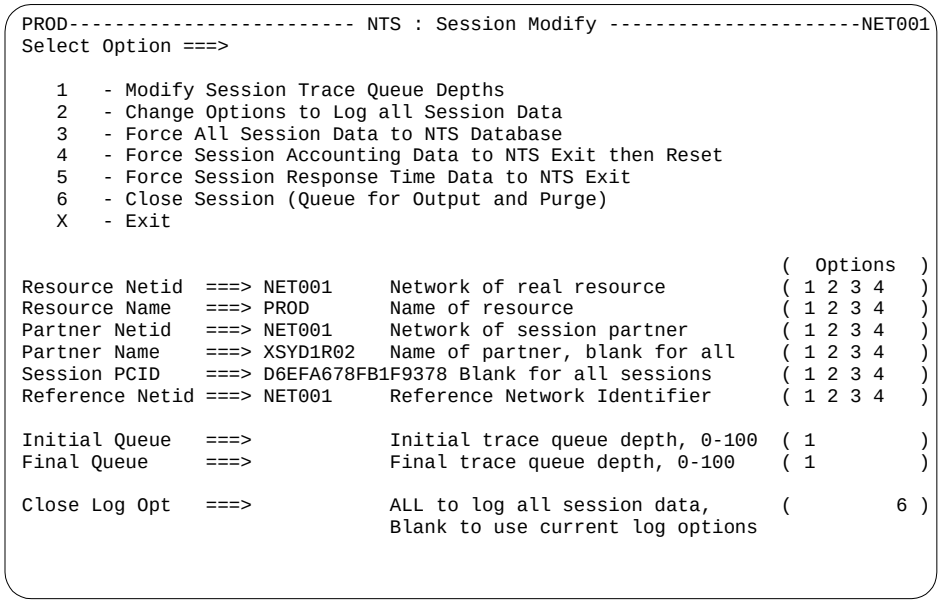
```
PROD---------------------- NTS : Resource Trace List -------------------NET001
COMMAND ===>                                                SCROLL ===> PAGE

    Res-Name Type Status      Res-Name Type Status      Res-Name Type Status
    *GLOBAL*  LU  INACT       *GLOBAL*  PU  INACT       *GLOBAL* CDRM INACT
    **END**
```

For details of the information displayed and options available on this panel, press F1 (Help).

Modifying Session Processing

To modify processing for a session, enter **M** beside a session in the NTS : Session List. The NTS : Session Modify panel is displayed.

Figure 15-15.NTS : Session Modify Panel



```
PROD------------------------ NTS : Session Modify ----------------------NET001
Select Option ===>

   1   - Modify Session Trace Queue Depths
   2   - Change Options to Log all Session Data
   3   - Force All Session Data to NTS Database
   4   - Force Session Accounting Data to NTS Exit then Reset
   5   - Force Session Response Time Data to NTS Exit
   6   - Close Session (Queue for Output and Purge)
   X   - Exit

                                                                (  Options  )
Resource Netid  ===> NET001     Network of real resource         ( 1 2 3 4   )
Resource Name   ===> PROD       Name of resource                 ( 1 2 3 4   )
Partner Netid   ===> NET001     Network of session partner       ( 1 2 3 4   )
Partner Name    ===> XSYD1R02   Name of partner, blank for all   ( 1 2 3 4   )
Session PCID    ===> D6EFA678FB1F9378 Blank for all sessions     ( 1 2 3 4   )
Reference Netid ===> NET001     Reference Network Identifier     ( 1 2 3 4   )

Initial Queue   ===>            Initial trace queue depth, 0-100  ( 1         )
Final Queue     ===>            Final trace queue depth, 0-100    ( 1         )

Close Log Opt   ===>            ALL to log all session data,      (         6 )
                                Blank to use current log options
```

This panel is used to modify session logging and tracing options. These correspond to the NTSMOD command options.

For details of the options and input fields available on this panel, press F1 (Help).

For more information about session logging and tracing, see the *Unicenter NetMaster Network Management for SNA Implementation and Administration Guide*.

Determining Problems by Testing Routes

By testing routes, you can help to determine problems with network congestion associated with excess traffic. NTS allows you to test both explicit and virtual routes. When you perform a test, NTS navigates a route between two specified subareas to obtain the status, transmission priority, and any routes mapped to the specified route.

To test a route, enter **7** at the ===> prompt on the NTS : Primary Menu. The NTS : Route Test Menu is displayed.

Figure 15-16.NTS : Route Test Menu

```
PROD------------------------ NTS : Route Test Menu --------------------NET001
Select Option ===>

   1   - Display Route Selection List
   2   - Perform Route Test
   3   - Display Route Status
   4   - Display Route Configuration
   X   - Exit


Origin       ===> SYDVTM01
Destination  ===>

Route Type   ===> VR       (ER or VR, except option 3 - VR only,
                                        option 4 - ER only )

Route Number ===> 0        (0-15, for a specific explicit route number,
                            0-7,  for a specific virtual route number,
                                  required for options 2 to 4 )
Trans Pri    ===> 0        (0-2,  for a specific transmission priority,
                                  required for option 3 only )

Network      ===> SDINET1  (Netid where route exists)
```

For details of the options and input fields available on this panel, press F1 (Help).

Testing Virtual Routes

To test a virtual route, perform the following steps:

Step 1. Type **2** at the ===> prompt on the NTS : Route Test Menu.

Step 2. Specify the Origin and Destination subareas.

Step 3. Specify VR in the Route Type field.

Step 4. Press ENTER. The NTS : Route Tested panel is displayed.

Figure 15-17.NTS : Route Tested Panel for a Virtual Route

```
PROD-------------------------- NTS : Route Tested ----------------------NET001
COMMAND ===>                                                  SCROLL ===> PAGE

From Subarea  SSCP001    ( OSA#  00000001 )                   Network SDINET1
To   Subarea  SSCP001    ( DSA#  00000001 )

     VR TP VR-Stat   Subarea   Adj-SA    Adj-SA#   ER  TG#  ER-Stat  H#

      0  0 VR-ACT    ISTPUS    ISTPUS    00000001   0    1  ER-ACT    1
         1 VR-ACT
         2 VR-ACT
```

For details of the information displayed on this panel, press F1 (Help).

Displaying Virtual Route Status

The virtual route status allows you to view the status of a virtual route at a particular stage. The status display provides information about route congestion. If the route is congested, you might need to change the VR and TP of a session or the pacing window size.

To display the status of a virtual route, enter **VST** next to a virtual route stage on the NTS : Route Tested panel. The NTS : Virtual Route Status panel is displayed.

Figure 15-18.NTS Virtual Route Status Panel (Summary Data)

```
PROD---------------------- NTS : Virtual Route Status -----------------------FTI
COMMAND ===>

VR 0   FROM SDD1VTM1 (0000000E) TO NCP1603  (00000010)

 Origin                    Window Size    Seq Number        Destination
                           Min Cur Max    Sent  Rcvd
.-----------------.           0   0   0    0000  0000        .-----------------.
|      SSCP       |                                         |      NCP        |
|                 | ER0  >--->---->---->---->---->---->---->                  |
| PU  : ISTPUS    |                                         | PU  : NCP1603   |
| SSCP: SDD1VTM1  |           VR 0   TP 1   RTM N/A         | SSCP: SDD1VTM1  |
| SA  : 0000000E  |                                         | SA  : 00000010  |
|                 | <----<----<----<----<----<----<---< ER0  |                 |
.-----------------.         N/A N/A N/A    N/A   N/A         .-----------------.
```

The following information is provided:

- Sent and received PIU counts
- Pacing window sizes
- Underlying ER and reverse ER

- Any VR congestion information
- Inbound VR PIU pools, if available
- NCP buffer statistics, if the subarea is an NCP

If a subarea PU cannot provide virtual route status information, then it is highlighted and the reason is displayed on the panel.

To monitor the status of virtual routes, enter **VST** next to an entry on the Virtual Route List. The NTS : Virtual Route Status panel is displayed, showing summary data for the selected virtual route. This data is flagged as TP (Transmission Priority) 0.

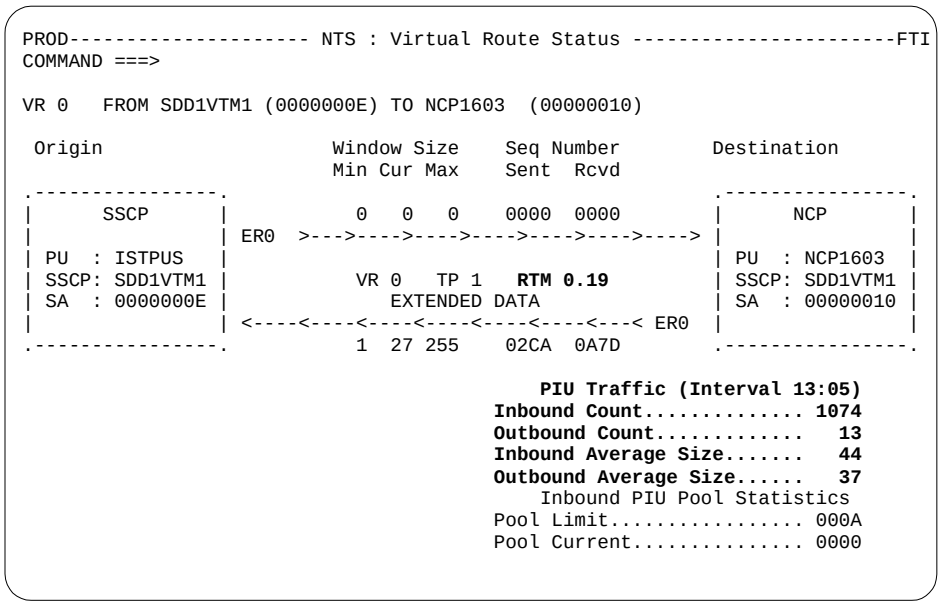
Using RTM Data to Test a Virtual Route

If your NetMaster for SNA region is currently linked to a NetSpy agent, it automatically displays RTM data for a virtual route.

Note

If the NetMaster-to-NetSpy interface is not active, no RTM data is displayed.

Figure 15-19.NTS Virtual Route Status Panel (RTM Data)



The RTM data from the NetSpy agent is shown here in **bold** print.

To view RTM data for each TP value, press ENTER again. To return to the display for TP 0, press F6.

Testing Explicit Routes

To test an explicit route, perform the following steps:

Step 1. Type **2** at the ===> prompt on the NTS : Route Test Menu.

Step 2. Specify the Origin and Destination subareas.

Step 3. Specify ER in the Route Type field.

Step 4. Press ENTER. The NTS : Route Tested panel is displayed.

Figure 15-20.NTS : Route Tested Panel for an Explicit Route

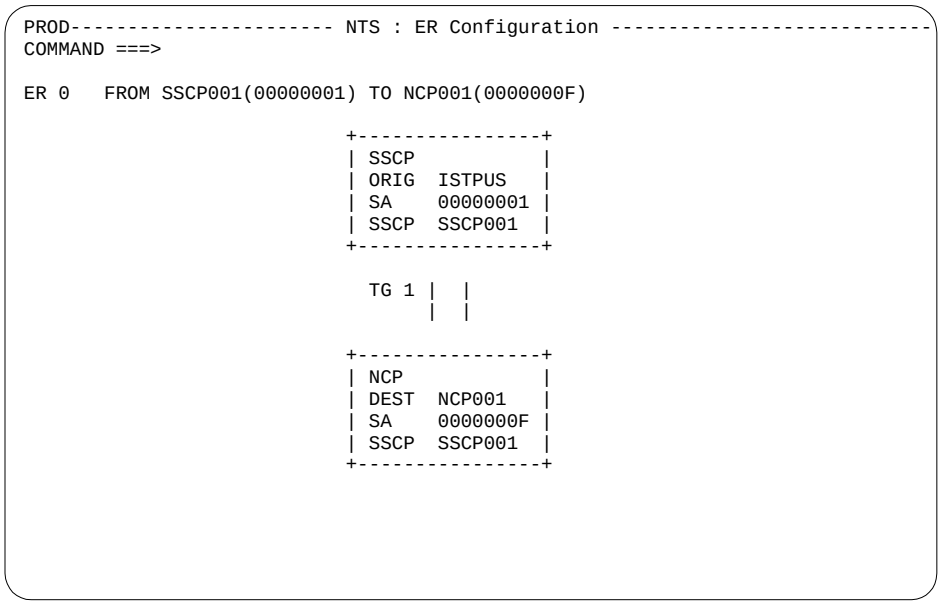
```
PROD------------------------- NTS : Route Tested ----------------------NET001
COMMAND ===>                                                 SCROLL ===> PAGE

From Subarea  SSCP001    ( OSA#  00000001 )                  Network NET001
To   Subarea  NCP001     ( DSA#  0000000F )

       ER ER-Stat   Subarea   Adj-SA    Adj-SA#   TG# VR TP  VR-Stat  H#

       0  ER-ACT    ISTPUS    NCP01C    0000000F    1  0  0  VR-ACT    1
                                                          1  VR-ACT
                                                          2  VR-ACT
```

For details of the information displayed on this panel, press F1 (Help).

Explicit route configuration provides a graphical representation of the status of a particular stage of an explicit route. The explicit route display provides information about route congestion.

To display the configuration of an explicit route, enter **C** next to an explicit route on the NTS : Route Tested panel. The NTS : ER Configuration panel is displayed.

Figure 15-21.NTS : ER Configuration Panel



The following information is provided:

- The resource type, SSCP name, PU name, and subarea number for each subarea in the route.
- The status and transmission group of each ER stage. An ER stage with no labeling status indicates that the ER is active over this stage.

If an ER cannot be navigated to the destination subarea, then the blocking subarea is highlighted and the reason is displayed at the top of the panel.

16

Getting More Information

This chapter describes how to use the Information Database facility to get more information about network errors.

This chapter discusses the following topic:

- About the Information Database

About the Information Database

The network information utility provides access to a network information file. This file is structured into categories containing useful network information such as codes and their descriptions.

The information in this database can be altered as desired. For information on how to alter the information database, see the online help.

Accessing the Information Database

To access the information database, enter **/CODES** at a ===> prompt. The Management Services : Messages and Codes Menu is displayed, showing a list of available categories.

Figure 16-1. Management Services : Messages and Codes Menu

```
PROD----------- Management Services : Messages and Codes Menu -----------/CODES
Select Option ===>

   M   - Product Message List                              MSGS
   A   - Dynamic Allocation Error Codes                    DAIR
   V   - VSAM Open Macro Return Codes                      VSAMRC
   N   - NDB Error Codes                                   NDBERR
   S   - SQL Error Codes                                   SQLERR
   D   - DB2 Error Codes                                   DB2ERR
   VT  - VTAM ACB Error Codes                              VTAMACB
   SE  - SNA Sense Codes                                   SNAERR
   ST  - SNA Status Codes                                  SNACODE
   U   - 3274 Error Codes                                  -
   T   - 3174 Error Codes                                  -
   P   - NPSI Error Codes                                  -
   X   - Exit




 F1=Help      F2=Split     F3=Exit      F4=Return
                           F9=Swap
```

For details of the options available on the Messages and Codes Menu, press F1 (Help).

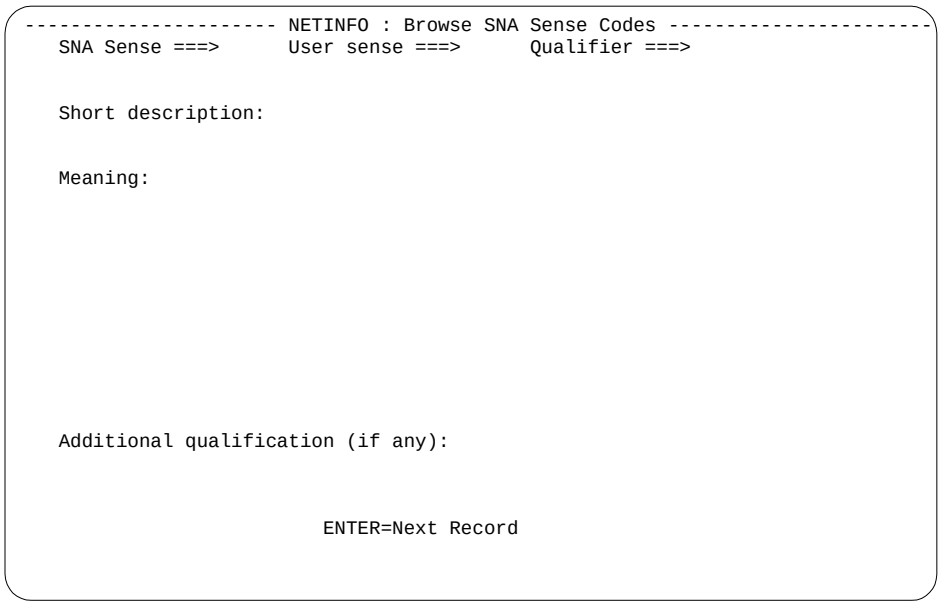
Using the Information Database—An Example

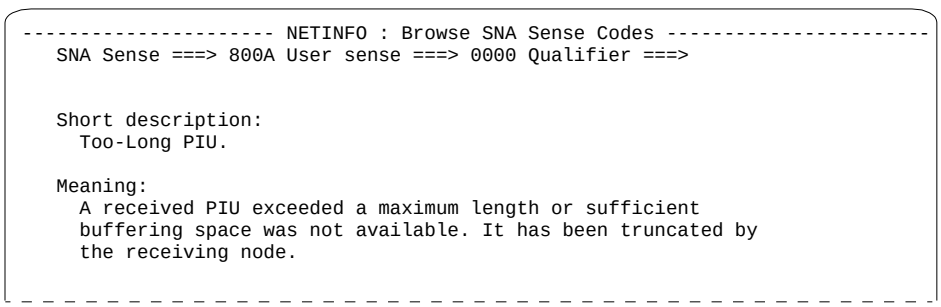
You might want to know the meaning of the SNA sense code, 800A. To do this, perform the following steps:

Step 1. Enter **SE** at the ===> prompt on the Messages and Codes Menu. The NETINFO : Browse SNA Sense Codes panel is displayed (see the first panel in Figure 16-2).

Step 2. Enter 800A at the SNA Sense ===> prompt. The information about SNA sense code 800A is displayed (see the second panel in Figure 16-2).

Figure 16-2. NETINFO : Browse SNA Sense Codes Panel





Part V

Appendixes

A

NCPView Adapter Configuration

There are two major adapter types that can be connected to the 3745 controller in varying configurations. They are:

- Channel adapters
- Line adapters

Without NCPView, the only method of viewing adapter configuration and status information is by using the Maintenance Operator SubSystem (MOSS) console. NCPView allows you to view the configuration and status of your network's 3745 communications controllers. These controllers can be at different geographic locations.

Channel Adapters

There are two kinds of channel adapters. They are:

- CADS—a regular data-streaming channel adapter
- BCCA—a buffer-chaining type channel adapter (this is the more efficient type of adapter)

Depending upon which communications controller model number is being used and whether you have channel adapters with two-processor switches (TPS), a maximum of 16 channel adapters can be installed. Channel adapters with TPS provide two channel interfaces which can either both connect to the same host, or each connect to a different host.

Note

The 3745-150 and 3745-160 communications controllers do not support channel adapters.

Line Adapters

There are four kinds of line adapters. They are:

- Transmission subsystem (TSS)
- High-performance transmission subsystem (HPTSS)
- Token-ring subsystem (TRSS)
- Ethernet-type subsystem (ESS)

Depending upon which of the four line adapter types you are using, there can be up to 32 lines attached to your 3270 controller:

- The TSS can attach up to 32 lines.
- The HPTSS can attach up to two T1 lines.
- The TRSS can attach up to eight token-ring adapters.
- The ESS can attach up to 16 ethernet-type lines.

Adapter Configuration

An NCP can control only two input/output control buses (IOCs); this is the number of buses on a Central Control Unit (CCU). In those cases where a communications controller has two CCUs and one is inactive or failed, the IOC 1 buses for both CCUs are joined, as are the IOC 2 buses. See Figure A-1 and Figure A-2.

Figure A-1. Example of the IOC Configuration for TWIN-DUAL and TWIN-BACKUP Modes

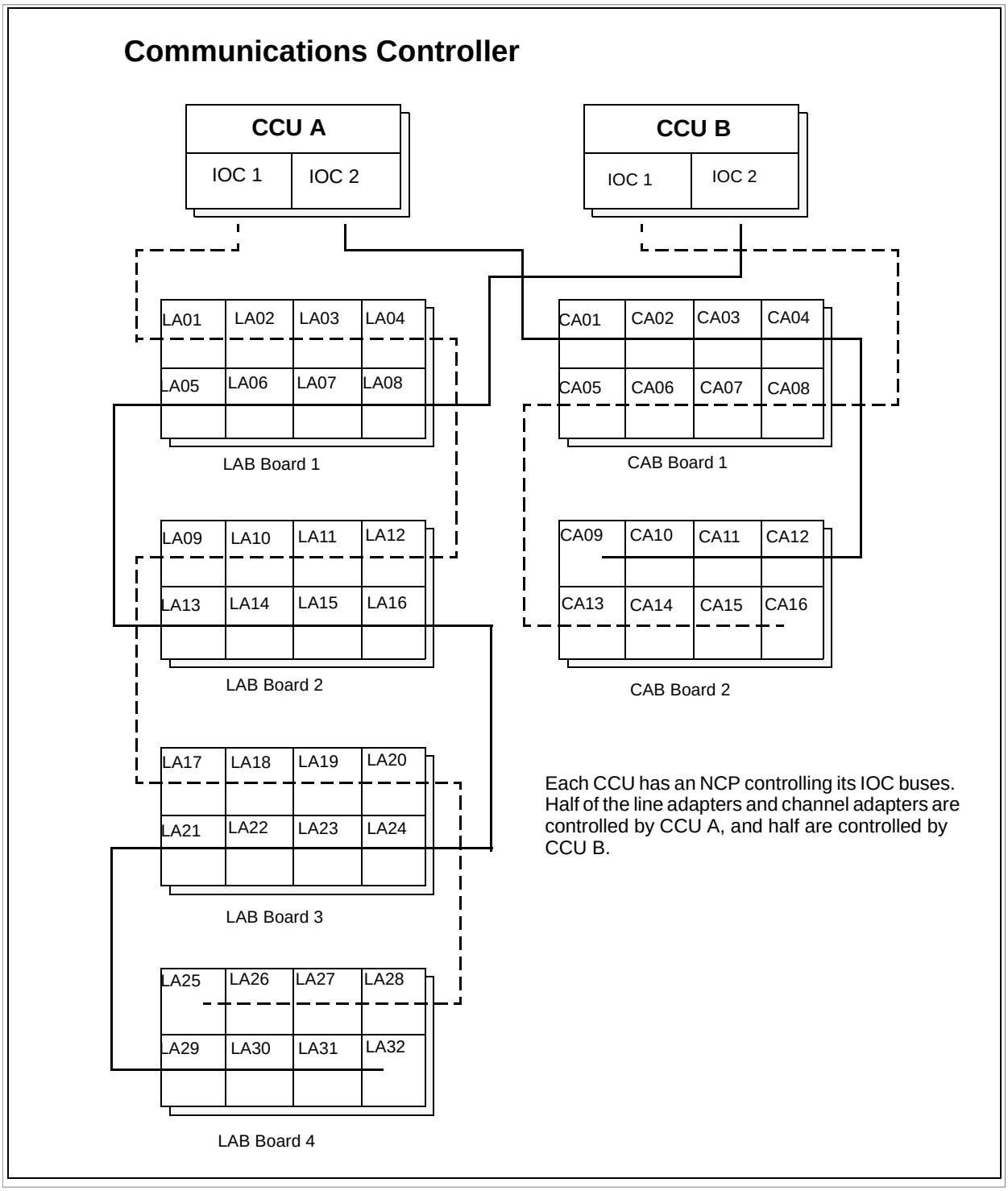
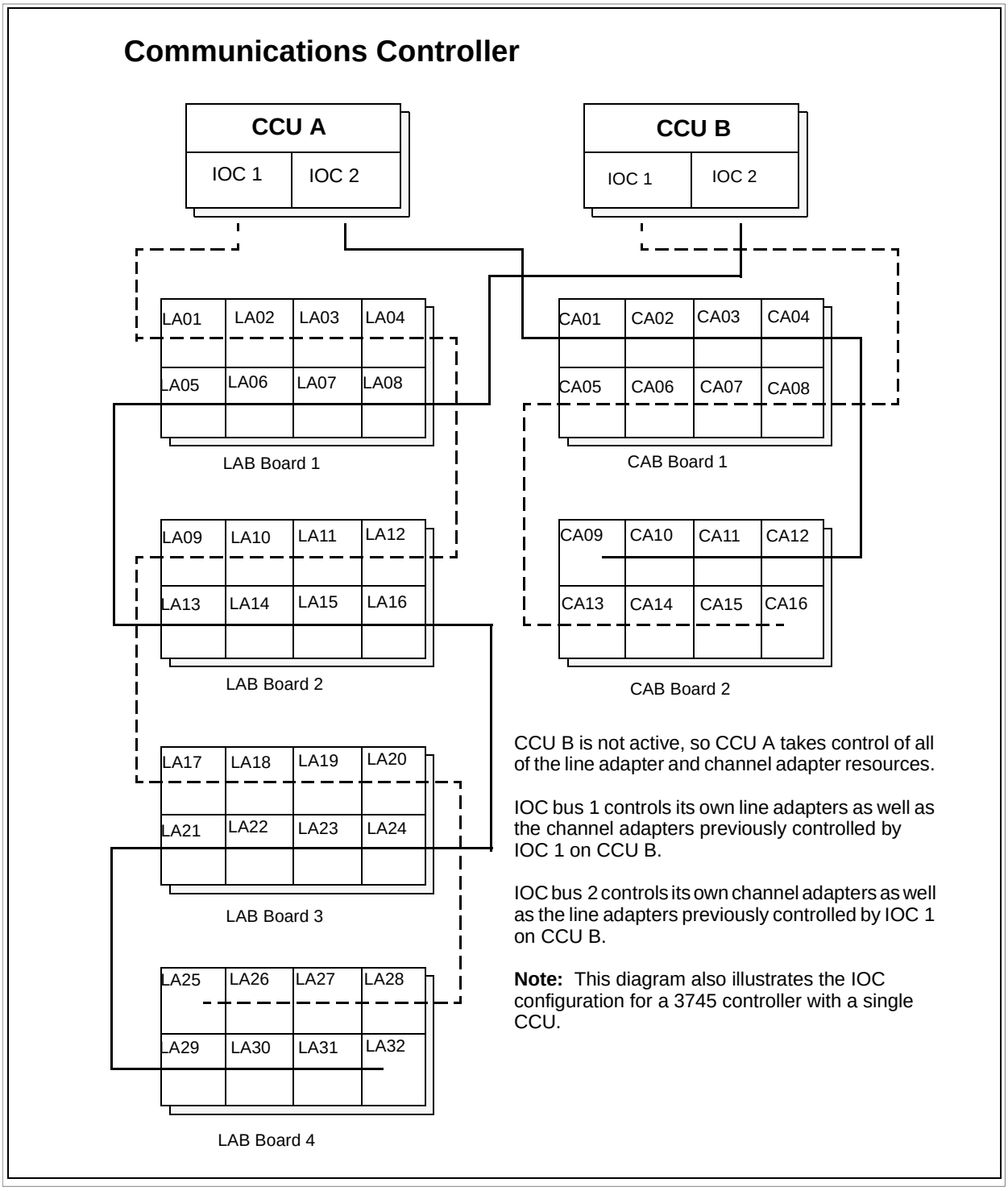


Figure A-2. Example of the IOC Configuration for Processing After a CCU Failure Using TWIN-STANDBY or TWIN-BACKUP Mode



B

NCPView Buffers, Pools, and Control Blocks

This appendix describes NCPView buffers, pools, and control blocks.

Included is a table containing details of all control block pools that can be viewed with the NCP monitor option **PL** (NCP Buffer Pool List).

Buffers and Pools

Immediately after the NCP has been loaded into the communications controller, NCP formats all remaining controller storage space into buffers, the size of which is specified when the NCP is generated. Buffers form chains, with each one except the last containing a pointer to another buffer. The buffer chain is also known as the system free buffer pool, a dynamic collection of buffers that can be taken (leased) as needed to contain data. When the data in buffers is no longer needed, the buffers are reattached (released) to the free buffer pool.

Buffers can be set aside to receive incoming data—these buffers are known as committed buffers. Committed buffers are not counted as available when the slowdown status is calculated.

Buffers contain path information unit (PIU) messages from access methods in channel-attached host processors, other NCPs, and from link-attached devices and control blocks.

Buffers can contain dynamically allocated control blocks when there are no more available reserved control blocks in the appropriate pools, as defined in the generation definition.

When defining pools in the generation definition, space can be reserved for control blocks. The pool can be defined to contain a particular number of control blocks. NCPView may indicate that a pool is being used to almost its capacity—if this occurs it is recommended that the NCP generation definition be changed accordingly and the size of the pool increased.

Control Blocks

Control blocks are either defined in the NCP generation definition or dynamically allocated.

Defined Control Blocks

Control blocks are initially defined in the NCP generation definition. They are defined within pools which contain particular types of control blocks; for example, you may have a pool of control blocks for physical units (PUs).

When a pool is defined in the NCP generation definition it can contain a number of control blocks that are reserved for later use. As they are eventually used and there is no more room left in the pool, additional control blocks can be dynamically defined and placed in buffers.

NCPView provides you with a view of the current pool usage so that it is possible to change the pool size definition in the NCP generation definition and allocate more control blocks.

Dynamic Control Blocks

If dynamic control block allocation is enabled by coding DYNPOOL in the BUILD definition statement of the NCP generation definition, NCP is able to allocate more control blocks than the generation definition allows. This is useful when there are not enough resources defined in the generation definition to meet a sudden demand. It should be noted that because dynamic control blocks use up buffers from the buffer pool, NCP performance can be degraded during periods of high demand. It is therefore recommended that your NCP generation definition has all of the resources you expect to be required, already defined.

Control Block Pools

Table B-1 provides the pool names and their descriptions.

Table B-1. Control Block Pools

Pool Name	Description
BSB-D-LU-LU	Dependent LU-LU Boundary Session
BSB-D-SSCP-LU	Dependent SSCP-LU Boundary Session
BSB-I	Independent Boundary Session Block
BXI-D	Dependent Boundary Session Block Extension
BXI-I	Independent Boundary Session Block Extension
CBB	Committed Buffers Block
CRX	Communications Rate
CUB	Common PU Block
CXB	Common PU Block Extension
CXI	Common PU Block Extension for Embedded Blocks
CX2	Common Physical Unit Block Extension 2
ENI	IP/DLC Interface Control Block
FCT	Flow Control Parameter Table
FRTE	ODLC Frame-relay Logical Resources
GPB	Buffer pool (GPB)
HRE	Host Route Entry
LAE	Local Address Entry
LDA	LU Block Extension Data Area
LKE	ODLC Link Control Block Extension
LLB-FR	Frame Relay Logical Links

Table B-1. Control Block Pools

Pool Name	Description
LLB-TR	Token-ring Logical Links pool
LNB	Independent LU Network Address
LND/LNB	Dependent LU
LTX-TERM	LU Terminal Node Extension
LUB	LU Dynamic Reconfiguration
LUX	LU Block Extension
NIX	Network Interconnect Extension
NLX	Programmed Resource LU Block Extension
NNT	Network Names Table
NQE	NPA Counter Queue Element
NQX	NPA Counter Queue Element Extension
NQ2	NPA Counter Queue Element Extension 2
NRE	Network Route Entry
NSB	Frame Relay Physical Station NPM
NSC	NPA Session Counters
NSX	NPA Session Counter Extension
NVT	Network Vector Table
OLANR	ODLC LAN Logical Resources
RIB	Route Interface Control Block
RVT	Resource Vector Table
SCE	ODLC Stations
SRE	Subnetwork Route Entry
SSB	SOCA Station Information
VAT	Virtual Route Access Table
VTS	Vector Table of SNPs (SSCP - NCP session control blocks)
VVT	Virtual Route Vector Table

C

NetView Operator Commands

This appendix describes the NetView operator command emulation that is provided by NetMaster for SNA as a conversion aid for former NetView users. The NetView operator commands that are supported are listed here, and the procedure to execute them is described.

If you are not familiar with NetMaster for SNA, it would be useful to read Chapter 2, *Getting Started*, before you read this appendix.

Supported NetView Operator Commands

Table C-1 shows the supported NetView operator commands. The table also shows any required parameters, the authority you need to execute the command, and any other pertinent information.

Getting Help

To get detailed help for each NetView operator command, enter the command followed by a space and a question mark.
For example:

```
BFRUSE ?
```

Some NetView operator commands have associated parameters. If you enter one of these commands without the mandatory parameter, the help is automatically displayed.

Help for each NetView operator command shows the correct syntax for the command, a description of any associated parameters, and examples to illustrate its use.

The INDEX command provides a list of all the supported NetView operator commands. You can access the detailed help for any NetView operator command by entering **S** next to the command in the INDEX list.

Table C-1. Supported NetView Operator Commands

Command	Function	Mandatory Parameters	Optional Parameters	Notes	Auth
ACT	Activates a network node.	nodename	opt1 opt2 opt3 ... opt*n*	Generates a VTAM V NET,ACT command.	1
APPLS	Displays VTAM applications.		scope	Use *scope* to limit display. If this is not specified, then all applications are displayed.	0
BFRUSE	Displays VTAM buffer pools.		pool1 pool2 ... pool*n*	Issues a VTAM V NET,BFRUSE. Use *pool* to limit display.	0
BROWSE	Displays the NetMaster activity log or a dataset/member.		entity | dataset	Enter either an *entity* or *dataset* name.	0
CDRMS	Displays VTAM cross-domain managers.		scope	NCS display—or issues a VTAM D NET,CDRMS command. Use *scope* to limit display—if this is not specified, then all managers are displayed.	0
CDRSCS	Displays VTAM cross-domain resources.		scope	NCS display—or issues a VTAM D NET,CDRSCS command. Use *scope* to limit display—if this is not specified, all resources are displayed.	0
CLSTRS	Displays VTAM clusters.		scope	NCS display—or issues a VTAM D NET,CLSTRS command. Use *scope* to limit display—if this is not specified, all clusters are displayed.	0
DATE	Displays the current date and time.			Issues a TIME command.	0
DIS	Displays the status of system resources.	resource	all act actonly conct inact inactonly only pending reset		
DISG	Provides a graphical display of a VTAM node.	nodename		Display is produced using Network Control System (NCS).	0
DISPFK	Displays the current function key settings.			Issues a Management Services (MS) PF command.	0
EVENTS	Displays a list of the most recent events for a resource.	resource			0
INACT	Inactivates a network node.	nodename	opt1 opt2 opt3 opt4	Issues a VTAM V NET,INACT command.	1

Table C-1. Supported NetView Operator Commands

Command	Function	Mandatory Parameters	Optional Parameters	Notes	Auth
INACTF	Force-inactivates a network node.	nodename	opt1 opt2 opt3 opt4	Issues a VTAM V NET,INACT,F command.	1
INDEX	Displays the help index.			Gives access to detailed help for each command.	0
LINES	Displays VTAM lines.		scope	NCS display—or issues a VTAM D NET,LINES command. Use *scope* to limit display—if this is not specified, all lines are displayed.	0
LISTVAR	Displays system variables.				0
MAJNODES	Displays VTAM major nodes.		scope	NCS display—or issues a VTAM D NET,MAJNODES command. Use *scope* to limit display to NCS Major Nodes list.	0
NCPSTOR	Displays NCP storage.		ncpname addr len S	Issues a VTAM D NCPSTOR command or specifies the S parameter for a scrollable full-screen display using NCPView.	0
PENDING	Displays VTAM nodes that are in a pending state.		scope	NCS display—or issues a VTAM D NET,PENDING command. Use *scope* to limit display to the NCS Pending Nodes list.	0
PURGEDB	Deletes records from NetMaster for SNA databases.		process	Displays a panel where database maintenance can be performed. Use *process* to indicate which database.	0/4
RECYCLE	Inactivates then activates (recycles) a VTAM node.	nodename		Issues a VTAM V NET,INACT and then a VTAM V NET,ACT command for the resource.	1
RMTSESS	Displays remote sessions.			Displays a panel that lists INMC links to other systems and indicates whether the user is signed on.	0
SENSE	Displays the SNA sense code description.	category	modifier	Displays the description from the Network Information Database (NETINFO).	0
SESS	Displays an active/history session list.	resource1	resource2	Requires UAMS NTS access privilege.	0
STARTDOM	Establishes a session to a remote system.	*linkname* | DOMAIN=*domain-id* | SSCP=*sscp-name*		Alternatively use the SIGNON command which allows many additional parameters.	0

Table C-1. Supported NetView Operator Commands

Command	Function	Mandatory Parameters	Optional Parameters	Notes	Auth
STATS	Displays the most recent statistics for a resource.	resource		Requires UAMS NEWS access privilege.	0
STOPSESS	Disconnects from a remote system.	linkname | DOMAIN=*domain-id* | SSCP=*sscp-name*		Alternatively use the SIGNOFF command.	0
TSOUSER	Displays a VTAM TSO user.	user-id		Issues a VTAM D NET,ID=TSOUSER command.	0
WHO	Displays system usage, links, and status.			Combines the output from SHOW USERS, SHOW LINKS, and STATUS commands.	0
WINDOW	Executes a command in a window.	command			0

How to Execute NetView Operator Commands Using NetMaster for SNA

NetView operator commands can be executed by using Operator Console Services (OCS).

To execute a NetView operator command from OCS, follow these steps:

Step 1. Enter **O** at the ===> prompt on the Primary Menu. An OCS window opens, as shown in Figure C-1.

Step 2. Type the NetView operator command at the ==> prompt.

Step 3. Type a space.

Step 4. Type any required parameters, separated by a comma or space.

Step 5. Press ENTER.

For example:

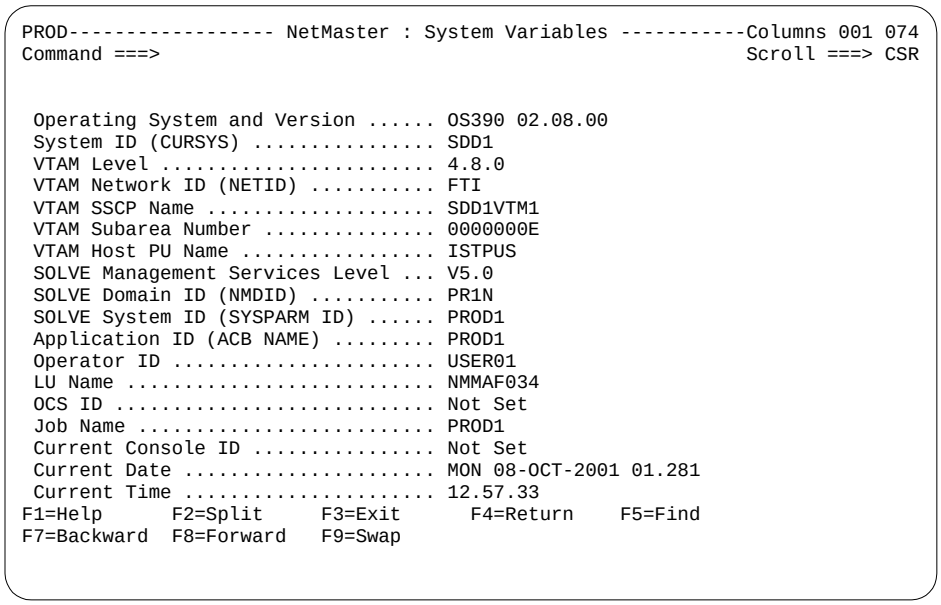
```
INACT NODE1,ACT FINAL
```

Figure C-1 illustrates the entry of a LISTVAR NetView operator command and Figure C-2 shows the output.

For more information about OCS, see the relevant chapter in the *Management Services User's Guide*.

Figure C-1. OCS Window Showing LISTVAR NetView Operator Command Entry

Figure C-2. LISTVAR NetView Operator Command Output



Command Not in Library Message

See your systems administrator if you get the following message when you enter a NetView operator command:

START *commandname*
N04005 NCL PROCEDURE *commandname* DOES NOT EXIST IN LIBRARY COMMANDS.

It means that the NetView operator command facility has not been enabled. Enabling the NetView operator command facility is described in the *Unicenter NetMaster Network Management for SNA Administrator Guide*.

Glossary

This glossary defines the terms and abbreviations commonly used with Management Services.

It also includes references to terms used in an IBM environment and any equivalent Fujitsu terms.

3270 VDU terminal
: An IBM video display terminal. This is often used to refer to the entire range of 3270 terminals. When followed by a number (for example, 3270-5), a specific model is intended.

3705/3720/3725/3745
: An IBM front end communications processor (the Fujitsu equivalent is a CCP or 2806).

ACB
: See *Access Method Control Block*.

Access Method Control Block (ACB)
: A control block that links an application program to an access method such as IBM's VTAM or VSAM.

Access Security Exit
: An installation-provided routine that can be used to replace the Management Services UAMS functions, partially or completely, allowing logon, logoff, and password maintenance requests to be passed to an external security system.

ACF/NCP

Advanced Communications Function for the Network Control Program. Synonym for *NCP.*

ACF/VTAM (Advanced Communication Facility/VTAM)

IBM's product implementation of SNA's SSCP or CP.

Active Link

A link that is currently available for transmission of data.

Activity Log

A system-maintained log that records all important activity for use in later problem determination.

Adapter

A part that electrically or physically connects a device to a computer or to another device.

Adjacent Control Point

A Control Point (CP) that is directly connected to an APPN, LEN, or composite node by a link.

Adjacent Link Station (ALS)

(1) In SNA, a link station directly connected to a given node by a link connection over which network traffic can be carried.

Note

Several secondary link stations that share a link connection do not exchange data with each other and therefore are not adjacent to each other.

(2) With respect to a specific node, a link station partner in an adjacent node.

Advanced Peer-to-Peer Networking (APPN)

An extension to SNA featuring:

- Greater distributed network control that avoids critical hierarchical dependencies, thereby isolating the effects of single points of failure
- Dynamic exchange of network topology information to foster ease of connection, reconfiguration, and adaptive route selection
- Dynamic definition of network resources
- Automated resource registration and directory lookup
- APPN extends the LU6.2 peer orientation for end-user services to network control and supports multiple LU types, including LU 2, LU 3, and LU 6.2.

Advanced Program to Program Communications (APPC)

An IBM-defined application level protocol which makes use of SNA's LU 6.2.

Alert

(1) A message sent to a Management Services focal point in a network to identify a problem or an impending problem.

(2) In SNA Management Services (SNA/MS), a high priority event that warrants immediate action.

ALS

See *Adjacent Link Station.*

ANR

See *Automatic Network Routing.*

APF

See *Authorized Program Facility.*

APPC

See *Advanced Program to Program Communications.*

APPL

A VTAM term used to describe the definition that allows an application to use VTAM facilities.

APPN

See *Advanced Peer-to-Peer Networking.*

APPN Network

A collection of interconnected network nodes and their client nodes.

APPN Network Node

A node that offers a broad range of end-user services and that can provide the following:

- Distributed directory services, including registration of its domain resources to a central directory server
- Topology database exchanges with other APPN network nodes, enabling network nodes throughout the network to select optimal routes for LU-LU sessions based on requested classes of service
- Session services for its local LUs, and client end nodes
- Intermediate routing services within an APPN network

Automatic Network Routing (ANR)

In high performance routing, a highly efficient routing protocol that minimizes cycles and storage requirements for routing network layer packets through intermediate nodes on the route.

ASN.1

Abstract Syntax Notation One, defined by ISO 8824, is an abstract syntax used to describe data structures. It is used by Mapping Services to define data structures within Management Services.

Authorized Program Facility (APF)

Describes the special authorization level required within the operating system for certain applications.

Backup Focal Point

A focal point that provides Management Services support for a particular category for a node in the event of a communications failure with the primary focal point. Both assigned focal points (explicit and implicit) and default focal points can have backup counterparts. Contrast with *Primary Focal Point.*

Backward Explicit Congestion Notification (BECN)

A bit set by a frame relay network to notify an interface device that congestion avoidance procedures should be initiated by the sending device.

Beaconing

Pertaining to repeated transmission of a beacon message when a normal signal is not received because of a serious fault, such as a line break or power failure. The message is repeated until the error is corrected or bypassed.

BECN

See *Backward Explicit Congestion Notification.*

BIND

(1) A VTAM term describing the action of logically linking one network resource with another network resource.

(2) In SNA, a request to activate a session between two logical units.

Border Node

An APPN network node that interconnects APPN networks having independent topology databases in order to support LU-LU sessions between these networks.

Boundary Node

In SNA, a subarea node with boundary function.

> **Note**
>
> A subarea node can be a boundary node, an intermediate routing node, both, or neither, depending on how it is used in the network.

Broadcast Services

Broadcast Services controls the sending of messages throughout NetMaster systems.

CDRM

See *Cross-Domain Resource Manager.*

CDRSC

See *Cross-Domain Resource*.

Central Directory Server

A network node that provides a repository for information on network resource locations; it also reduces the number of network searches by providing a focal point for queries and broadcast searches and by caching the results of network searches to avoid later broadcasts for the same information.

Channel Adapter

A communication controller hardware unit that is used to attach the communication controller to a host channel.

Checkpoint

Refers to a point of synchronization in processing where a unit of work is complete, or partially complete, such as where data is recorded for restart purposes. A point at which information about the status of transmission can be recorded so that it can be restarted later.

Class of Service

A set of characteristics (such as route security, transmission priority, and bandwidth) used to construct a route between session partners. The Class of Service (CoS) is derived from a mode name specified by the initiator of a session.

Client

A functional unit that receives shared services from a server.

CNM

See *Communications Network Management*.

CNMPROC

The name given to an NCL procedure used to intercept CNM records received across the VTAM CNM interface by the NEWS component of NetMaster for SNA.

Command Partition

A term associated with NPF that describes the group of network resources a user ID is authorized to reference with VTAM commands.

Communications Network Management (CNM)

IBM term for its SNA management facilities.

Configuration Management

An ISO/OSI classification of management functions that apply to the ability to set or change operating parameters of the system, to collect and distribute information on their status, to associate names with the entities, and to change the system configuration.

Congestion

See *Network Congestion.*

Control Member

A term associated with NPF that describes the list of resource table names applying to a user ID. This control member is referenced in the definition of USERID.

Control Point

(1) A component of an APPN or LEN node that manages the resources of that node. In an APPN node, the CP is capable of engaging in CP-CP sessions with other APPN nodes. In an APPN network node, the CP also provides services to adjacent end nodes in the APPN network.

(2) A component of a node that manages resources of that node and optionally provides services to other nodes in the network. Examples are a System Services Control Point (SSCP) in a type 5 subarea node, a network node control point in an APPN network node, and an end node control point in an APPN or LEN end node.

CP

See *Control Point.*

CP-CP Sessions

The parallel sessions between two Control Points, using LU 6.2 protocols and a mode name of CPSVCMG, on which network services requests and replies are exchanged. Each CP of a given pair has one contention-winner session and one contention-loser session with the other.

CP Name

A network-qualified name of a Control Point (CP), consisting of a network ID qualifier identifying the network (or name space) to which the CP's node belongs, and a unique name within the scope of that network ID identifying the CP.

Cross Domain

In SNA, pertaining to control or resources involving more than one domain.

Cross-Domain Resource

A VTAM term describing the definition of a network resource that is owned by a VTAM in another domain.

Cross-Domain Resource Manager (CDRM)

In VTAM, the function in the System Services Control Point (SSCP) that controls initiation and termination of cross-domain sessions.

Data Link Connection Identifier (DLCI)

The numeric identifier of a frame relay subport of a PVC segment in a frame relay network. Each subport in a single frame relay port has a unique DLCI.

DLCI

See *Data Link Connection Identifier.*

Domain

(1) An SNA term describing a domain that consists of the set of SNA resources controlled by one common control point called an SSCP. In terms of implementation, an SSCP is the host access method (VTAM). An SNA network consists of one or more domains.

(2) A VTAM term that describes a logical division of a network. Networks are divided into domains that are associated with the way they are controlled.

Domain ID

Term for a 1-4 character mnemonic used as a unique identifier for a NetMaster system.

Dynamic Allocation

Assignment of datasets to a program at the time the program is executed rather than at the time the job is started.

End Node

In communications, a node that is frequently attached to a single data link and cannot perform intermediate routing functions.

ER

See *Explicit Route.*

Exception

The result of a service request that did not complete successfully. See *Reply* and *Response*.

Exit

An installation-written routine that can be driven from a point within a program to provide data to the program, or perform additional processing relevant to that installation's specific requirements.

Explicit Route (ER)

In SNA, a series of one or more transmission groups that connect two subarea nodes. An ER is identified by an origin subarea address, a destination subarea address, an Explicit Route number, and a reverse Explicit Route number. Contrast with *Virtual Route.*

Extended Datastream

A 3270 datastream containing fields that utilize color and extended highlighting capabilities of the terminal.

Extended Multiple Console Support (EXTMCS)

EXTMCS consoles are consoles that the SYSCMD facility can use as an alternative to JES consoles in an MVS/ESA 4.1, or later, environment.

EXTMCS

See *Extended Multiple Console Support*.

FCS

See *Finance Communications System*.

FECN

See *Forward Explicit Congestion Notification.*

Finance Communications System (FCS)

A system used by banks and other large financial institutions.

Forward Explicit Congestion Notification (FECN)

A bit set by a frame relay network to notify an interface device that congestion avoidance procedures should be initiated by the receiving device. Contrast with *BECN.*

Frame Handler

Synonym for *Frame Relay Frame Handler (FRFH).*

Frame Handler Subport (FHSP)

The access point of a frame relay frame handler to a PVC segment. Frame Handler SubPorts function in pairs; frames enter the frame handler through one frame handler subport and exit through the other. Contrast with *Terminating Equipment Subport.*

FHSP

See *Frame Handler Subport***.**

Frame Relay

(1) An interface standard describing the boundary between a user's equipment and a fast-packet network. In frame relay systems, flawed frames are discarded; recovery comes end-to-end rather than hop-by-hop. (2) A technique derived from the integrated services digital network (ISDN) D channel standard. It assumes that connections are reliable and dispenses with the overhead of error detection and control within the network.

Frame Relay Connection

See *Frame Relay Physical Line* and *Permanent Virtual Circuit (PVC).*

Frame Relay Frame

The frame relay frame structure defined by American National Standards Institute (ANSI) Standard T1.618.

Frame Relay Frame Handler (FRFH)

(1) The function in a frame relay node that routes (or switches) frames along a permanent virtual circuit. A frame handler receives frames from an adjacent frame relay node and uses the DLCI to forward them to the next node on the PVC. Synonymous with frame handler. See also *frame relay switching equipment support* and *frame relay terminating equipment*.

(2) In NCP, the function that switches frames between frame handler subports on an internal PVC segment. The NCP frame handler function can also switch frames to the frame relay terminating equipment function.

Frame Relay Network

A network that consists of frame relay handlers and in which frames are passed from one frame relay terminating equipment station to another through a series of one or more frame relay frame handlers.

Frame Relay Physical Line

The physical connection between two frame relay nodes. A frame relay physical line can simultaneously support PVC segments for both the frame handler and terminating equipment functions. In NCP, a frame relay physical line is defined as a nonswitched duplex line.

Frame Relay Switching Equipment (FRSE)

See *frame relay switching equipment support.*

Frame Relay Switching Equipment Subport Set

The set of primary and, optionally, substitute frame handler subports within an NCP that comprise those used for a given frame relay segment set.

Frame Relay Switching Equipment Support

In NCP, a set of frame relay functions, including the frame relay frame handler function and the Local Management Interface (LMI) function. These functions are defined by American National Standards Institute (ANSI) Standards T1.617 and T1.618, and International Telegraph and Telephone Consultative Committee (CCITT) Standards Q.922 and Q.933. NCP provides additional functions, including performance measurement and enhanced reliability, that are not defined by ANSI or CCITT standards.

Frame Relay Terminal Equipment (FRTE)

A device that can connect to a frame relay network and provide the Frame Relay Terminating Equipment function. See also *Frame Relay Frame Handler* and *Frame Relay Terminating Equipment.*

Frame Relay Terminating Equipment

The function at the end of a frame relay permanent virtual circuit. Frame relay terminating equipment provides higher-layer protocols with access to a frame relay network through terminating equipment subports. It does this by (a) adding frame relay frame headers to data for another protocol and sending the frames to adjacent frame relay nodes, and (b) receiving frames from adjacent frame relay nodes and removing the frame headers. See also *Frame Relay Frame Handler, Frame Relay Switching Equipment Support,* and *Frame Relay Terminal Equipment.*

Frame Switching

The function performed by frame relay nodes to route frames through a network. See also *Frame Relay Frame Handler.*

FRFH

See *Frame Relay Frame Handler.*

FRSE

See *Frame Relay Switching Equipment.*

FRTE

See *Frame Relay Terminating Equipment.*

Gateway

(1) A functional unit that interconnects two computer networks with different network architectures. A gateway connects networks or systems of different architectures. A bridge interconnects networks of system with the same or similar architectures.

(2) The combination of machines and programs that provide address translation, name translation, and System Services Control Point (SSCP) rerouting between independent SNA networks to allow those networks to communicate. A gateway consists of one gateway NCP and at least one gateway VTAM.

(3) In the IBM token-ring network, a device and its associated software that connect a local area network to another local area network or a host that uses different logical link protocols.

(4) In TCP/IP, synonym for *router.*

(5) To the routing layer, the logical distance between two nodes in a network.

Information Management System (IMS)
IBM's database/data communication (DB/DC) system that can manage complex databases and networks.

INMC
See *Inter-Management Services Connection.*

INMC/EF
See *INMC/Extended Function.*

INMC/Extended Function (INMC/EF)
INMC/EF provides the capability for up to sixteen sessions between any pair of systems. In appropriate systems, these sessions can traverse different physical network paths, thus increasing throughput. This component also provides additional link security and management facilities.
In releases prior to Version 3.0, INMC/EF was a separate component. At release 3.0 it became a part of INMC.

Inter-Management Services Connection (INMC)
This facility allows systems running in a network containing multiple CPUs to communicate with each other, providing general-purpose data transfer between CPUs within the network.

Inter-System Routing (ISR)
ISR is used to propagate system and network management information between systems in the network.

Interchange Node
A VTAM node that acts as both an APPN network node and a type 5 subarea node to transform APPN protocols to subarea protocols and vice versa.

Intermediate Network Node
(1) In APPN, a node that is part of a route between an Origin Logical Unit (OLU) and a Destination Logical Unit (DLU), but does not contain the OLU or DLU and does not serve as the network server for the OLU or DLU.

(2) In VTAM, deprecated term for *intermediate routing node.*

(3) In NCP, deprecated term for *subarea node.*

ISR

See *Inter-System Routing.*

JES (Job Entry Subsystem) Consoles

Virtual consoles, defined when you first perform the NetMaster for SNA initial startup procedure. These consoles can be acquired by an authorized program for use in issuing OS/390, z/OS, and subsystem commands.

Key Sequenced Data Set (KSDS)

A VSAM dataset whose records are directly accessed by a user-supplied key.

KSDS

See *Key Sequenced Data Set.*

LAN

See *Local Area Network.*

LEN

See *Low Entry Networking.*

Link

A term used to describe a logical connection between two or more systems. See also *INMC (Inter-Management Services Connection)*.

Link Service Access Point

In the IBM token-ring network, the logical point at which an entity in the logical link control sublayer provides services to the next higher layer.

LLC

See *Logical Link Control.*

LMI

See *Local Management Interface Protocol.*

LMI Subport

A frame relay subport that exchanges line status information with adjacent nodes using Local Management Interface (LMI) protocol. In NCP, the LMI subport is the link-station subport for the physical line.

Local Area Network (LAN)

(1) A computer network located on a user's premises within a limited geographical area. Communication within a LAN is not subject to external regulations; however, communication across the LAN boundary may be subject to some form of regulation.

(2) A network in which a set of devices are connected to one another for communication and that can be connected to a larger network. Contrast with *WAN*.

Local Management Interface (LMI) Protocol

In NCP, a set of frame-relay network management procedures and messages used by adjacent frame-relay nodes to exchange line status information over DLCI X‘00’. NCP supports both the ANSI and CCITT versions of LMI protocol. These standards refer to LMI protocol as link integrity verification tests.

Logical Line

The representation of the connection between NCP and a node communicating with NCP over a physical line such as token ring or frame relay. A single physical line can support multiple logical lines. Contrast with *physical line.*

Logical Link Control (LLC)

The protocol in a LAN that governs the exchange of transmission frames between data stations, regardless of how the transmission medium is shared.

Logical Unit (LU)

The point of access for any user to an SNA network. SNA introduced the concept of the Logical Unit (LU). The LU is a type of SNA Network Accessible Unit (NAU) that provides protocols for end users to gain access to the network and to the functional components of the LUs.

LOGMODE

A VTAM term used to describe a table entry that defines the characteristics and protocols of a terminal.

Logoff

A request by an LU that it be disconnected from a VTAM application program.

Logon

A request by an LU that it be connected to a VTAM application program.

LOGPROC

The name given to an NCL procedure used to intercept messages destined for the Management Services activity log.

Low Entry Networking (LEN)

A capability of nodes to attach directly to one another using basic peer-to-peer protocols to support multiple and parallel sessions between LUs.

LSR (Local Shared Resources)

A technique for buffering I/O to VSAM files called LSR pools. NCL supports this type of processing for User Databases (UDBs).

LU

See *Logical Unit.*

LU0

An unconstrained SNA protocol that allows implementers to select any set of available protocol rules, as long as the two LUs are able to communicate with each other successfully according to the rules chosen. Therefore, all LU types are an implementation of LU Type 0.

LU1

A line-by-line or typewriter type terminal (for example, 3767, 3770), using SNA protocols.

LU2

A 3270 type terminal using SNA protocols.

LU3

LU Type 3 was implemented to support printers with a different data stream format. LU Type 3 is used by printers attached to an IBM display cluster controller.

LU4

LU Type 4 was implemented so that office system products could transfer documents. LU Type 4 is used by banking devices.

LU6.2

A protocol that serves as a port into an SNA network. LU6.2 defines a specific set of services, protocols, and formats for communication between logical processors. LU6.2 provides presentation services for presentation of data to the end user, transaction services for performing transaction processing on behalf of the end user and LU services for managing the resources of the LU.

LU7

An SNA protocol that is used by word-processing devices.

MAC

See *Medium Access Control.*

Major Node

In VTAM, a set of resources that can be activated and deactivated as a group. Contrast with *Minor Node.*

Management Services

Management Services provides the central core of functions and services for the 3270 Unicenter, NetMaster, and SOLVE products.

Management Services Unit (MSU)

A data unit in an SNA network. There are various types of SNA MSUs, and many reasons for the generation of each type of MSU.

Mapped Data Object (MDO)
Any data item that can be represented as a continuous string of bytes in storage.

MDO
See *Mapped Data Object.*

Medium Access Control (MAC)
In LANs, the sublayer of the data link control layer that supports medium-dependent functions and uses the services of the physical layer to provide services to the logical link control sublayer. The MAC sublayer includes the method of determining when a device has access to the transmission medium.

Message Partition
A term associated with NPF that describes the group of network resources for which a user ID will receive unsolicited (PPO) VTAM messages.

Minor Node
In VTAM, a uniquely defined resource within a major mode. See also *Major Node* and *Node*.

MSGPROC
An NCL procedure used to intercept and process messages destined for a user's Operator Console Services (OCS) window.

MSU
See *Management Services Unit.*

NAU
See *Network Accessible Unit (NAU).*

NCL
See *Network Control Language.*

NCL Procedure
A member of the procedures dataset comprising NCL statements and Management Services (MS) or VTAM commands. The NCL statements and other commands are executed from an EXEC or START command specifying the name of the procedure.

NCL Process
The NCL task that is invoked, usually by a START command to execute one or more associated procedures. Each NCL process has a unique NCL process identifier.

NCL Processing Environment
Provides the internal services and facilities required to execute NCL processes for the user, from its associated window.

NCL Processing Region

All users (real or virtual) have an NCL Processing Region associated with their user ID while logged on. This region provides all of the internal services needed to allow the user to have processes executed on their behalf. There may be a maximum of two active NCL environments in a user's NCL region.

NCLID

A 6-digit NCL process identifier which is unique within the system. It is used to identify a process for the purpose of communicating with that process.

NCP

See *Network Control Program.*

NCS

See *Network Control Services*.

NDB

The NetMaster database. An extension to NCL which provides a relational database facility that can be used as a repository for applications running within a system. Full update capabilities, including scans with extensive Boolean logic, are provided.

Network Accessible Unit (NAU)

In SNA, a logical unit, a physical unit, or a system services control point. The NAU is the origin or destination of information transmitted by the path control network. Synonymous with network accessible unit.

Network Control Language (NCL)

The interpretive language that allows logical procedures (programs) to be developed externally to Management Services and then executed by Management Services on command. NCL contains a wide range of logic, built-in functions and arithmetic facilities which can be used to provide powerful monitoring and automatic control functions.

Network Control Program (NCP)

This resides within and controls the operation of a communications controller. The NCP communicates with VTAM.

Network Control Services (NCS)

A facility of NetMaster for SNA that provides full-screen displays and navigation of the network in Management Services.

Network Error Warning System (NEWS)

A facility of NetMaster for SNA which is used to provide network error and traffic statistics and error alert messages.

Network Management Vector Transport (NMVT)
A management services Request/response Unit (RU) that flows over an active session between Physical Unit management services and Control Point management services (SSCP-PU session).

Network Node
See *APPN Network Node.*

Network Partitioning Facility (NPF)
A facility of Management Services that allows the range of resources which an operator can influence to be denied.

Network Tracking System (NTS)
A facility of NetMaster for SNA used to provide SNA session monitoring, dynamic online network tracing, accounting, and response time information in conjunction with diagrammatic representations of session partners.

NEWS
See *Network Error Warning System.*

NMVT
See *Network Management Vector Transport*.

Node
(1) A connection point in a communications network.

(2) In network topology, the point at an end of a branch. Any device, attached to a network, that transmits and receives data.

(3) An endpoint of a link or a junction common to two or more links in a network. Nodes can be processors, communication controllers, cluster controllers, or terminals. Nodes can vary on routing and other functional capabilities,

(4) In VTAM, a point in a network defined by a symbolic name.
See *Major Node* and *Minor Node.*

NPF
See *Network Partitioning Facility.*

NPF Control Member
A member of the NPF dataset member which defines a list of member names that are to be the resource tables for the associated user ID.

NPF Resource Table
A member of the NPF dataset that defines a group of network resource names. The resource names can be defined specifically or generically using wildcard characters. A resource table is pointed to by a control member.

NT 2.1

Node Type 2.1. A node in an SNA network. It implements a peer-to-peer protocol and allows greater dynamics in network configuration, greater independence in session set up between partner LUs, and reduced definitions.

NTS

See *Network Tracking System.*

OCS

See *Operator Console Services*.

Operator Console Services (OCS)

A facility of Management Services that provides general operational control and an advanced operator interface to VTAM for network management.

OS/390

An IBM operating system.

Packet

The logical unit of transmission in a network.

Partitioned DataSet (PDS)

A type of dataset format that supports multiple individual members in the one physical dataset. Equivalent to the Source Statement Library in VSE/SP systems.

Path Information Unit (PIU)

An SNA packet.

PDS

See *Partitioned DataSet*.

Peer

In network architecture, any functional unit that is in the same layer as another entity.

Peer-to-Peer Management

A non-hierarchical heterogeneous network management system.

Permanent Virtual Circuit (PVC)

(1) In X.25 and frame relay communications, a virtual circuit that has a logical channel permanently assigned to it at each data terminating equipment (DTE). Call-establishment protocols are not required. Contrast with switched virtual circuit (SVC).

(2) The logical connection between two frame relay terminating equipment stations, either directly or through one or more frame relay frame handlers. A PVC consists of one or more PVC segments.

Physical Line

The physical connection between NCP and an adjacent device or local area network (LAN). A single physical line, such as token ring or frame relay, can support multiple logical lines. Contrast with *logical line.*

Physical Unit (PU)

(1) The control unit or cluster controller of an SNA terminal. The part of a control unit or cluster controller which fulfils the role of an SNA-defined PU.

(2) Each node (a logical grouping of hardware) in an SNA network is addressed by its PU. There are 4 types of nodes or PU in an SNA network: PU-T5, PU-T4, PU-T2, PU-T1. See *PU Type* x. A PU is a type of NAU. Contrast with *Network Accessible Unit (NAU)*.

PIU

See *Path Information Unit.*

PLU

See *Primary Logical Unit.*

PPI

See *Program to Program Interface*.

PPO

See *Primary Program Operator.*

PPOPROC

The name given to the NCL procedure used to intercept unsolicited VTAM (PPO) messages.

Primary and Secondary

Primary and secondary are SNA terms for describing the LU's role when the session is established. The primary LU sends the BIND request that causes the session to be established, and the secondary LU receives the BIND request. Rules defined in the BIND request determine which of these is the first speaker in the exchange of information.

Primary Focal Point

A focal point understood to be the preferred source of management services support for a particular category. Contrast with *Backup Focal Point.*

Primary Logical Unit (PLU)

In SNA, a type of LU that is usually used by the application programs in a host. It refers to the BIND sender for a session.

Primary Program Operator (PPO)

A VTAM term that describes a facility of VTAM that allows unsolicited network messages to be delivered to an application program, such as Management Services, for processing. (See also *SPO*.)

Primary Route

In NCP frame relay, the internal PVC segment between the two primary frame handler subports in a subport set. Contrast with *substitute route.*

Program to Program Interface (PPI)

PPI is a general-purpose facility which allows programs, written in any language, to exchange data.

PU

See *Physical Unit*.

PU Type 1

A type of Physical Unit or Node in an SNA network. Consists of a terminal (such as an IBM 3278).

PU Type 2

A type of Physical Unit or Node in an SNA network. Consists of a cluster controller (such as an IBM3*x*74, 3276, 3770, or 3790).

PU Type 4

A type of Physical Unit or Node in an SNA network. Consists of a communications controller (such as an IBM 3704, 3705, 3725, or 3745).

PU Type 5

A type of Physical Unit or Node in an SNA network. Consists of a host computer system (such as an S/390 or z900, running VTAM or sometimes VCAM).

PVC

See *Permanent Virtual Circuit.*

Quiesce

(1) To end a process by allowing operations to complete normally
(2) To request that a node stop sending synchronous-flow messages.

Quiesce Protocol

In VTAM, a method of communicating in one direction at a time. Either the primary logical unit or the secondary logical unit assumes the exclusive right to send normal-flow requests, and the other node does not send such requests. When the sender wants to receive, it releases the other node from its quiesced state.

Rapid Transport Protocol (RTP) Connection

In high-powered routing, the connection established between the endpoints of the route to transport session traffic.

RECFMS

See *Record Formatted Maintenance Statistics*.

RECMS
See *Record Maintenance Statistics*.

Record Formatted Maintenance Statistics (RECFMS)
A statistical record built by an SNA controller and usually solicited by the host.

Record Maintenance Statistics (RECMS)
An SNA error event record built from an NCP or line error and sent unsolicited to the host.

Remote Operator Facility (ROF)
A facility of Management Services that allows an operator to sign on to a remote location, execute commands, and have the results returned.

Reply
The information returned to a directive as a result of a request. This information may be either a response or an exception, together with appropriate arguments. See *Exception* and *Response*.

REQMS
See *Request for Maintenance Statistics.*

Request
The invocation of a directive, together with appropriate arguments. See *Exception* and *Response*.

Request for Maintenance Statistics (REQMS)
A host solicitation to an SNA controller for a statistical data record.

Request Unit (RU)
(SNA) A message unit that contains control information such as a request code, or function management headers, end-user data, or both.

Resource Table
A term associated with NPF that describes a list of resource names or generic resource names that define a command or message partition.

Response
The success result of a service request. See *Exception* and *Reply.*

Response Time Measurement (RTM)
Measurement of the time which passes between the user starting an action (by pressing a key) and the response appearing on the screen.

Response Time Monitor (RTM)
A facility provided by IBM's 3*x*74 control units to monitor end-user response times. NEWS can interpret this data.

Response Unit (RU)
(SNA) A message unit that acknowledges a request unit.

Return Code
A code returned from the system that indicates the success or failure of the task performed.

ROF
See *Remote Operator Facility.*

Route
(1) An ordered sequence of nodes and Transmission Groups (TGs) that represent a path from an origin node to a destination node traversed by the traffic exchanged between them.

(2) The path that network traffic uses to get from source to destination.

Router
(1) A computer that determines the path of network traffic flow. The path selection is made from several paths based on information obtained from specific protocols, algorithms that attempt to identify the shortest or best path, and other criteria such as metrics or protocol-specific destination addresses.

(2) An attaching device that connects two LAN segments, which use similar or different architectures, at the reference model network layer.

(3) In OSI terminology, a function that determines a path by which an entity can be reached.

(4) In TCP/IP, synonymous with *gateway.*

(5) Contrast with *bridge.*

Routing Update Protocol (RUP)
The VIrtual NEtworking System (VINES) protocol that maintains the routing database and allows the exchange of routing information between VINES nodes.

RTM
(1) See *Response Time Measurement.*
(2) See *Response Time Monitor.*

RTP
See *Rapid Transport Protocol Connection.*

RU
(1) See *Request Unit.*
(2) See *Response Unit.*

SAW

See *Session Awareness Data.*

SDLC

See *Synchronous Data Link Control.*

Secondary Logical Unit (SLU)

In SNA, a type of LU that is usually used by the end-users at the terminals or by programs which reside in the peripheral node.

Secondary Program Operator (SPO)

A VTAM term that describes a facility of VTAM that allows only messages generated by commands issued by an application program, such as Management Services, to be delivered to the application program for processing. Unsolicited messages are not delivered. Contrast with *PPO*.

Security Initialization Unit

A hardware device that creates and loads encrypting codes, also known as *keys*, for your computer system.

Sequence Number

A number assigned to each message exchanged between a VTAM application program and an LU. Values increase by one throughout the session, unless reset by the application program using an STSN or CLEAR command.

Server

A process designed to serve the data to a client, or request process, for one or more users.

Service Point

An entry point that supports applications that provide network management for resources not under the direct control of itself as an entry point. Each resource is either under the direct control of another entry point or not under the direct control of any entry point. A service point accessing these resources is not required to use SNA sessions (unlike a focal point). A service point is needed when entry point support is not yet available for some network management function.

Session

(1) In network architecture, for the purpose of data communication between functional units, all the activities which take place during the establishment, maintenance, and release of the connection.

(2) A logical connection between two Network Accessible Units (NAUs) that can be activated, tailored to provide various protocols, and deactivated, as requested. Each session is uniquely identified in a transmission header accompanying any transmissions exchanged during the session.

Session Awareness Data (SAW)
A type of network management data supplied by VTAM and processed by NTS.

Session Name
A name assigned to a workstation or session to permit it to receive messages or share resources.

Session Replay Facility (SRF)
A part of SOLVE:Access which provides the ability to record and playback terminal session scenarios.

SIS
See *Screen Image Services.*

SLU
See *Secondary Logical Unit.*

SMF
See *System Management Facility.*

SNA
See *Systems Network Architecture.*

SOLVE
The term SOLVE encompasses the services provided by Management Services and Automation Services. For example, the SOLVE PPI is a service provided by the subsystem interface (SSI) in Management Services.

SPO
See also *Secondary Program Operator.*

SRF
See *Session Replay Facility.*

SSCP
See *System Services Control Point.*

Structured field
Representation of user ID attribute information exchanged between Management Services and its security exit.

Subarea
A portion of the SNA network consisting of a subarea node, attached peripheral nodes, and associated resources. Within a subarea node, all Network Accessible Units (NAUs), links, and adjacent link stations (in attached peripheral or subarea nodes) that are addressable within the subarea share a common subarea address and have distinct element addresses.

Subport

(1) An access point for data entry or exit over a logical connection. The relationship between the physical line and the port is analogous to the relationship between the logical connection and the subport.

(2) In a frame relay network, the representation of a logical connection on a frame relay physical line and the point where the logical connection attaches to the frame relay frame handler. Each subport on a physical line has a unique data link connection identifier and can represent an FRTE, FRFH, or LMI connection. See *Frame Handler Subport* and *Terminal Equipment Subport.*

Subport Set

In NCP, a set of frame handler subports linked by internal PVC segments. A subport set consists of two primary frame handler subports and an optional substitute frame handler subport for each primary.

Substitute Route

In NCP frame relay, an internal PVC segment between a primary frame handler subport and a substitute frame handler subport in a subport set. Contrast with *Primary Route.* See also *Substitute Subport.*

Substitute Subport

In NCP, a frame handler subport in a subport set that is used when a primary frame handler subport in the set is not available.

Subtask

A unit of work whose environment is established by a main task, but has its own TCB, and is displaceable by the operating system.

Subvector

A subcomponent of the NMVT major vector.

SVC

See *Switched Virtual Circuit*.

Switched Virtual Circuit

An X.25 circuit that is dynamically established when needed. The X.25 equivalent of a switched line.

Synchronous Data Link Control (SDLC)

A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the ANSI and High-Level Data Link Control (HDLC) of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges can be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop.

SYSPARMS

System parameters—values that affect some system capabilities. Some SYSPARMS can be modified dynamically.

System Management Facility (SMF)

An optional control feature of OS/390 and z/OS that provides the means for gathering and recording information that can be used to evaluate system usage.

System Services Control Point (SSCP)

A function that VTAM implements to exchange data between CNM applications and PUs in an SNA network.

Systems Network Architecture (SNA)

This term describes the logical structure, formats, protocols, and operational sequences for transmitting communication data through the communication system (Fujitsu equivalent is FNA). A set of standards that allows the integration of all the different IBM hardware/software products into a universal network. Introduced in 1974.

TDU

See *Topology Database Update.*

TESP

See *Terminating Equipment Subport*

Terminal Equipment Subport

A subport that serves as a termination point on a virtual circuit.

Terminating Equipment Subport (TESP)

The endpoint of a frame relay permanent virtual circuit; the point at which frame relay terminating equipment has access to the PVC. A terminating equipment subport provides higher level functions with access to a frame relay physical line. Each terminating equipment subport in a single frame relay port has a unique Data Link Connection Identifier (DLCI). Contrast with *Frame Handler Subport.*

TG

See *Transmission Group.*

Thread

A unit of work running under the control of an application program.

Time Sharing Option (TSO)

Allows terminal operators to interact directly with computer resources and facilities. Used mainly by application and system programmers (Fujitsu equivalent is TSS).

Timestamp
The instant of time at which the information described by a data item was valid.

Token Ring
(1) According to IEEE 802.5, network technology that controls media access by passing a token (special packet or frame) between media-attached stations.

(2) A FDDI or IEEE 802.5 network with a ring topology that passes tokens from one attaching ring station (node) to another. See also *LAN*.

Topology
In communications, the physical or logical arrangement of nodes in a network, especially the relationships among nodes and the links between them.

Topology Database Update (TDU)
A message about a new or changed link or node that is broadcast among APPN network nodes to maintain the network topology database, which is fully replicated in each network node. A TDU contains information that identifies the following:

- The sending node
- The node and link characteristics of various resources in the network
- The sequence number of the most recent update for each of the resources described

Transmission Group (TG)
(1) A connection between adjacent nodes that is identified by a transmission group number.

(2) In a subarea network, a single link or a group of links between adjacent nodes. When a transmission group consists of a group of links, the links are viewed as a single logical link, and the transmission group is called a *multilink transmission group*. A *mixed-media multilink transmission group* is one that contains links of different medium types (for example, token-ring, switched SDLC, nonswitched SDLC, and frame-relay links).

(3) In an APPN network, a single link between adjacent nodes.

TSO
See *Time Sharing Option.*

UAMS
See *Userid Access Maintenance Sub-system*.

UDB
See *User Data Base*.

UDM

See *UnDeliverable Message.*

UnDeliverable Message (UDM)

A term that applies to the Network Partitioning Facility (NPF) of Management Services. It describes a message that cannot be directed to a terminal operator partitioned for the resource to which the message refers, or a message that does not apply to a specific resource.

Unformatted System Services (USS)

A VTAM term that describes a facility that translates an unformatted command such as LOGON or LOGOFF, into a field formatted command for processing by formatted system services. Applies to terminals before connection to an application.

User Data Base (UDB)

(1) UDB file access method layer allowing file access from NCL.

(2) A term used to identify VSAM datasets to which NCL procedures may have access using the &FILE verb (GET, PUT, ADD, and DEL options).

User ID

Defines the function and privilege level to which a specific user is entitled when they sign on to the system. It is associated with a secret password to prevent use by unauthorized personnel. This definition is stored in the UAMS dataset or on an external security system.

Userid Access Maintenance Sub-system (UAMS)

The security component of Management Services that supports the definition of authorized users and their associated function and privilege levels.

USS

See *Unformatted System Services*.

Verb

The term given to a stand-alone statement in an NCL program. NCL verbs cause actions to occur. There are different types of verbs, some that dictate the flow of processing and logic, others that fetch information for the procedure to process and others that cause data to flow to external targets.

VFS

See *Virtual File Services*.

Virtual File Services (VFS)

The VSAM dataset, used by many facilities as a database.

Virtual Machine (VM)

A superset operating system that allows other operating systems to run as if they each had their own machine.

Virtual Route (VR)

(1) In SNA, either (a) a logical connection between two subarea nodes that is physically realized as a particular Explicit Route, or (b) a logical connection that is contained wholly within a subarea node for intranode sessions. A VR between distinct subarea nodes imposes a transmission priority on the underlying explicit route, provides flow control through virtual route pacing, and provides data integrity through sequence numbering of path information units.

(2) Contrast with *Explicit Route.*

Virtual Storage Access Method (VSAM)

A method for processing data files that utilizes relative, sequential, and addressed access techniques. Conceptually identical to ENSCRIBE.

Virtual Telecommunications Access Method (VTAM)

A suite of programs that control communication between terminals and application programs.

Vital Product Data (VPD)

Hexadecimal data used to describe a particular device and its associated software.

VM

See *Virtual Machine.*

VM/ESA

An enhanced version of VM that supports 31-bit addressing.

VPD

See *Vital Product Data*.

VR

See *Virtual Route*.

VSAM

See *Virtual Storage Access Method*.

VTAM

See *Virtual Telecommunications Access Method*.

WAN

See *Wide Area Network.*

Wide Area Network (WAN)

(1) A network that provides communication services to a geographical area larger than that served by a local area network or a metropolitan area network, and that may use or provide public communication facilities.

(2) A data communication network designed to serve an area of hundreds or thousands of kilometers; for example, public and private packet-switching networks, and national telephone networks.

(3) Contrast with *Local Area Network.*

Wildcard

The term used to describe the character used (usually an asterisk) when defining resources generically—no specific matching character is required in the wildcard character position.

z/OS

An IBM operating system capable of supporting 64-bit architecture.

z/VM

An IBM operating system capable of supporting 64-bit architecture.

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